

10/584367

AP20 Rec'd PCT/PTO 23 JUN 2006

SEQUENCE LISTING

<110> Imperial College Innovations Limited
 <120> Vaccines

<130> ICOBW/P32315PC

<141> 22/12/04

<150> 0330007.6

<151> 23/12/03

<160> 56

<170> SeqWin99

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<212> DNA

<213> Neisseria meningitidis serogroup B NMB0341 (TspA) DNA sequence

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 <213> Neisseria meningitidis serogroup B NMB0341 (TspA) protein sequence

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 65 70 75 80
 Gly Glu Glu Ala Lys Ala Leu Leu Gly Gly Gly Ser Val Thr Val Ser
 85 90 95
 Glu Lys Gly Leu Thr Ala Lys Val His Lys Leu Gly Asp Lys Ala Val
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 Ile Ala Val Ser Ser Glu Gln Ala Val Arg Asp Pro Val Leu Val Phe
 115 120 125
 Arg Ile Gly Ala Gly Ala Gln Val Arg Glu Tyr Thr Ala Ile Leu Asp
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 Pro Val Gly Tyr Ser Pro Lys Thr Lys Ser Ala Leu Ser Asp Gly Lys
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 Thr His Arg Lys Thr Ala Pro Thr Ala Glu Ser Gln Glu Asn Gln Asn
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<213> Neisseria meningitidis serogroup B NMB0338 DNA sequence

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Gly Val Phe Ile Tyr Gly Ala Asn Met Lys Leu Ile Tyr Thr Val Ile
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Lys Ile Ile Ile Leu Leu Leu Phe Leu Leu Leu Ala Val Ile Asn Thr
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Asp Ala Val Thr Phe Ser Tyr Leu Pro Gly Gln Lys Phe Asp Leu Pro
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35 40 45

His Gln Tyr Glu Arg Gly Trp Phe Thr Ser Met Glu Thr Thr Val Ile
50 55 60

Arg Leu Lys Pro Glu Leu Leu Asn Asn Ala Arg Lys Tyr Leu Pro Asp
65 70 75 80

Asn Leu Lys Thr Val Leu Glu Gln Pro Val Thr Leu Val Asn His Ile
85 90 95

Thr His Gly Pro Phe Ala Gly Gly Phe Gly Thr Gln Ala Tyr Ile Glu
100 105 110

Thr Glu Phe Lys Tyr Ala Pro Glu Thr Glu Lys Val Leu Glu Arg Phe
115 120 125

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Gly Ser Gly Lys Met Glu Val Ser Val Pro Ala Phe Asp Tyr Glu Glu
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Leu Ser Gly Ile Arg Leu His Trp Glu Gly Leu Thr Gly Glu Thr Val
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Tyr Gln Lys Gly Phe Lys Ser Tyr Arg Asn Gly Tyr Asp Ala Pro Leu
180 185 190

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Phe Lys Ile Lys Leu Ala Asp Lys Gly Asp Ala Ala Phe Glu Lys Val
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210 215 220
Ser Ser Asn Leu Thr Leu Glu Lys Phe Ser Leu Glu Trp Lys Glu Gly
225 230 235 240
Val Asp Tyr Asn Val Lys Leu Asn Glu Leu Val Asn Leu Val Thr Asp
245 250 255
Leu Gln Ile Gly Ala Phe Ile Asn Pro Asn Gly Ser Ile Ala Pro Ser
260 265 270
Lys Ile Glu Val Gly Lys Leu Ala Phe Ser Thr Lys Thr Gly Glu Ser
275 280 285
Gly Ala Phe Ile Asn Ser Glu Gly Gln Phe Arg Phe Asp Thr Leu Val
290 295 300
Tyr Gly Asp Glu Lys Tyr Gly Pro Leu Asp Ile His Ile Ala Ala Glu
305 310 315 320
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325 330 335
Ile Ser Ala Lys Lys Met Thr Glu Glu Gln Ile Arg Asn Asp Leu Ile
340 345 350
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355 360 365
Leu Asp Ile Lys Thr Phe Arg Phe Thr Leu Pro Ser Gly Lys Ile Asp
370 375 380
Val Gly Gly Lys Ile Met Phe Lys Asp Met Lys Lys Glu Asp Leu Asn
385 390 395 400
Gln Leu Gly Leu Met Leu Lys Lys Thr Glu Ala Asp Ile Arg Met Ser
405 410 415
Ile Pro Gln Lys Met Leu Glu Asp Leu Ala Val Ser Gln Ala Gly Asn
420 425 430
Ile Phe Ser Val Asn Ala Glu Asp Glu Ala Glu Gly Arg Ala Ser Leu
435 440 445
Asp Asp Ile Asn Glu Thr Leu Arg Leu Met Val Asp Ser Thr Val Gln
450 455 460
Ser Met Ala Arg Glu Lys Tyr Leu Thr Leu Asn Gly Asp Gln Ile Asp
465 470 475 480
Thr Ala Ile Ser Leu Lys Asn Asn Gln Leu Lys Leu Asn Gly Lys Thr
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<211> 855
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<213> Neisseria meningitidis serogroup B NMB0738 DNA sequence

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<213> Neisseria meningitidis serogroup B NMB0738 protein sequence

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35 40 45

Asp Glu Thr Glu Leu Ala Val Ser Val Asp Val Arg Ser Gly Ile Asp
50 55 60

Ile Gly Gln Ala Arg Glu Gln Ile Ala Ser Leu Arg Arg Leu Gly His
65 70 75 80

Arg Val Glu Val Leu Phe Val Glu Ala Glu Glu Ser Val Leu Val Arg
85 90 95

Arg Phe Ser Glu Thr Arg Arg Gly His Pro Leu Ser Asn Gln Asp Met
100 105 110

Thr Leu Leu Glu Ser Leu Lys Lys Glu Arg Glu Trp Leu Phe Pro Leu
115 120 125

Lys Glu Ile Ala Tyr Cys Ile Asp Thr Ser Lys Met Asn Ala Gln Gln
130 135 140

Leu Arg His Ala Val Arg Gln Trp Leu Lys Val Glu Arg Thr Gly Leu
145 150 155 160

Leu Val Ile Leu Glu Ser Phe Gly Phe Lys Tyr Gly Val Pro Asn Asn
 165 170 175
 Ala Asp Phe Met Phe Asp Met Arg Ser Leu Pro Asn Pro Tyr Tyr Asp
 180 185 190
 Pro Glu Leu Arg Pro Tyr Thr Gly Met Asp Lys Pro Val Trp Asp Tyr
 195 200 205
 Leu Asp Gly Gln Pro Leu Val Gln Glu Met Val Asp Asp Ile Glu Arg
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 Phe Val Thr His Trp Leu Pro Arg Leu Glu Asp Glu Ser Arg Ser Tyr
 225 230 235 240
 Val Thr Val Ala Ile Gly Cys Thr Gly Gly Gln His Arg Ser Val Tyr
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 <212> DNA
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 aacaccgccca ccgccgcgat gatgctgcct ctagcaatgg gtatgctgag ccacctcgac 540
 caggaaaaag aacacaaaaac ctacgtcttc ctctgtctcg gcacgccta ttgcgccagc 600
 atcggcgggt tgggcacgct cgctcggtcg ccgcccaacc tgattgccgc caaagcccta 660
 aatctggact tcgtcggtcg gatgaagctc ggcctgccga tgatgctgtt gattctgccc 720
 ttgatgctgc tctccctgta cgctcatcctc aaacctaatt tgaacgaacg cgtggaaatc 780
 aaagccgaat ccaccccttg gacgtgcac cgctgatcg cgctgttgat ttctcttgcc 840
 acagccgccg cgtggatatt cagctccaaa atcaaaaccg ccttcggcat ttccaatccc 900
 gacaccgtta tcgccctgag tgccgcgctc gccgtcgtcg tcttcggcgt ggcgcaatgg 960
 aaggaagtgc cccgcaatac cgactggggc gtgttgatgc tcttcggcgg cggcatcagc 1020
 ctgagcacgc tgttgaaaac atccggcgcg tccgaagcct tgggacagca ggttgccgcc 1080
 accttttccg gcgcgcccgc atttttggtg atactcatcg tcgcccgtt cattattttt 1140
 ctgaccgagt tcaccagcaa caccgcctcc gccgcattgc ttgtaccgat tttctccggc 1200
 atcgctatgc agatggggct gccgaacaa gtcttggtat tcgtcatcgg catcggcgca 1260
 tcttggtcct tcatgctgcc ggttgccaca ccgcctaacg cgattgtgtt cggcacgggc 1320
 ttaatcaagc aacgcgaaat gatgaatgtc ggcatactgc tgaacatcct ctgcgtagta 1380
 ttggttgctc tgtgggctta tgctgtactg atgtaa 1416

<210> 10
 <211> 471
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB0792 protein sequence

<400> 10

Met Asn Leu His Ala Lys Asp Lys Thr Gln His Pro Glu Asn Val Glu
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 Leu Leu Ser Ala Gln Lys Pro Ile Thr Asp Phe Lys Gly Leu Leu Thr
 20 25 30
 Thr Ile Ile Ser Ala Val Val Cys Phe Gly Ile Tyr His Ile Leu Pro
 35 40 45
 Tyr Ser Pro Asp Ala Asn Lys Gly Ile Ala Leu Leu Ile Phe Val Ala
 50 55 60
 Ala Leu Trp Phe Thr Glu Ala Val His Ile Thr Val Thr Ala Leu Met
 65 70 75 80
 Val Pro Ile Leu Ala Val Val Leu Gly Phe Pro Asp Met Asp Ile Lys
 85 90 95
 Lys Ala Met Ala Asp Phe Ser Asn Pro Ile Ile Tyr Ile Phe Phe Gly
 100 105 110
 Gly Phe Ala Leu Ala Thr Ala Leu His Met Gln Arg Leu Asp Arg Lys
 115 120 125
 Ile Ala Val Ser Leu Leu Arg Leu Ser Arg Gly Asn Met Lys Val Ala
 130 135 140
 Val Leu Met Leu Phe Leu Val Thr Ala Phe Leu Ser Met Trp Ile Ser
 145 150 155 160
 Asn Thr Ala Thr Ala Ala Met Met Leu Pro Leu Ala Met Gly Met Leu
 165 170 175
 Ser His Leu Asp Gln Glu Lys Glu His Lys Thr Tyr Val Phe Leu Leu
 180 185 190
 Leu Gly Ile Ala Tyr Cys Ala Ser Ile Gly Gly Leu Gly Thr Leu Val
 195 200 205
 Gly Ser Pro Pro Asn Leu Ile Ala Ala Lys Ala Leu Asn Leu Asp Phe
 210 215 220
 Val Gly Trp Met Lys Leu Gly Leu Pro Met Met Leu Leu Ile Leu Pro
 225 230 235 240
 Leu Met Leu Leu Ser Leu Tyr Val Ile Leu Lys Pro Asn Leu Asn Glu
 245 250 255
 Arg Val Glu Ile Lys Ala Glu Ser Ile Pro Trp Thr Leu His Arg Val
 260 265 270
 Ile Ala Leu Leu Ile Phe Leu Ala Thr Ala Ala Ala Trp Ile Phe Ser
 275 280 285
 Ser Lys Ile Lys Thr Ala Phe Gly Ile Ser Asn Pro Asp Thr Val Ile
 290 295 300
 Ala Leu Ser Ala Ala Val Ala Val Val Val Phe Gly Val Ala Gln Trp
 305 310 315 320
 Lys Glu Val Ala Arg Asn Thr Asp Trp Gly Val Leu Met Leu Phe Gly

[illegible]

Glu Arg Asp Phe Asp Leu Thr Phe Ala Ala Ala Asp Ala Asp Phe Arg
 20 25 30
 Arg Tyr Phe Arg Ala Thr Phe Ser Asp Gly Ser Ser Val Val Cys Met
 35 40 45
 Asp Ala Pro Pro Asp Lys Met Ser Val Ala Pro Tyr Leu Lys Val Gln
 50 55 60
 Lys Leu Phe Asp Met Val Asn Val Pro Gln Val Leu His Ala Asp Thr
 65 70 75 80
 Asp Leu Gly Phe Val Val Leu Asn Asp Leu Gly Asn Thr Thr Phe Leu
 85 90 95
 Thr Ala Met Leu Gln Glu Gln Gly Glu Thr Ala His Lys Ala Leu Leu
 100 105 110
 Leu Glu Ala Ile Gly Glu Leu Val Glu Leu Gln Lys Ala Ser Arg Glu
 115 120 125
 Gly Val Leu Pro Glu Tyr Asp Arg Glu Thr Met Leu Arg Glu Ile Asn
 130 135 140
 Leu Phe Pro Glu Trp Phe Val Ala Lys Glu Leu Gly Arg Glu Leu Thr
 145 150 155 160
 Phe Lys Gln Arg Gln Leu Trp Gln Gln Thr Val Asp Thr Leu Leu Pro
 165 170 175
 Pro Leu Leu Ala Gln Pro Lys Val Tyr Val His Arg Asp Phe Ile Val
 180 185 190
 Arg Asn Leu Met Leu Thr Arg Gly Arg Pro Gly Val Leu Asp Phe Gln
 195 200 205
 Asp Ala Leu Tyr Gly Pro Ile Ser Tyr Asp Leu Val Ser Leu Leu Arg
 210 215 220
 Asp Ala Phe Ile Glu Trp Glu Glu Glu Phe Val Leu Asp Leu Val Ile
 225 230 235 240
 Arg Tyr Trp Glu Lys Ala Arg Ala Ala Gly Leu Pro Val Pro Glu Ala
 245 250 255
 Phe Asp Glu Phe Tyr Arg Trp Phe Glu Trp Met Gly Val Gln Arg His
 260 265 270
 Leu Lys Val Ala Gly Ile Phe Ala Arg Leu Tyr Tyr Arg Asp Gly Lys
 275 280 285
 Asp Lys Tyr Arg Pro Glu Ile Pro Arg Phe Leu Asn Tyr Leu Arg Arg
 290 295 300
 Val Ser Arg Arg Tyr Ala Glu Leu Ala Pro Leu Tyr Ala Leu Leu Val
 305 310 315 320
 Glu Leu Val Gly Asp Glu Glu Leu Glu Thr Gly Phe Thr Phe
 325 330

<210> 13
 <211> 1785
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB2050 DNA sequence

<400> 13
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 tggttgctga tgaagggccg gtttcagggc gagtttgccg gtttgaacgc gcacctggcg 120
 gaaaaggcgg caagatgtga ttttgtcgaa caggcacacg gcaaaaccgt gtcggaattg 180
 gcggtgttgg acgggaaata ccggcatttg caggacgaaa attatgcttt gggcaaccgt 240
 ttttccgcag ccgaaaagca gattgcccat ttgcaggaaa aagaggcgga gtcggcgcg 300
 ctgaagcagt cgtatatcga gttgcaggaa aaggcacagg gtttggcggt tgaaaacgaa 360
 cgtttgcaaa cgcagctcgg acaggaacgg aaggcgtttg ccgaccaata tgccttggaa 420
 cgccaaatcc gccaaaagaat cgaaaccgat ttggaagaaa gccgccaac tgtccgcgac 480
 gtgcaaaacg acctttccga tgtcggcaac cgttttgccg cagccgaaaa acagattgcc 540
 catttgacag aaaaagaggc ggaagcggag cggttgaggg agtcgcatac cgagttgcag 600
 gaaaaggcac agggtttggc ggttgaanaa caacgcaa atcgagaggaa 660
 cgccttgctt ctgaagagaa gctgtccttg ctgggcgagg cgcgcaaaag tttgagcgat 720
 cagtttcaaa atcttgccaa cacgattttg gaagaaaaaa gccgcggttt taccgagcag 780
 aaccgcgagc agctccatca ggttttgaac ccgctaaacg aacgcattca cggtttcggc 840
 gagttggtca agcaaaccta tgataaagaa tcgcgcgagc ggctgacgtt ggaaaacgaa 900
 ttgaaacggc ttcaggggtt gaacgcgcag ctgcacagcg aggcaaaagg cctgaccaac 960
 gcgctgaccg gtacgcagaa taaggttcag ggcaattggg gcgagatgat tctggaaacg 1020
 gttttgaaaa attccggcct tcagaaaggg cgggaatatg tggttcaggc ggcattccgtc 1080
 cgaaaagagg aagacggcgg cacgcgcggc ctccagcccg acgttttggg caacctgccc 1140
 gacaacaagc agattgtgat tgattccaag gtctcgctga cagcttatgt gcgctacacg 1200
 caggcggcgg atgcggatac ggcggcacgc gaactggcgg cacacgttgc cagcatccgt 1260
 gcacacatga aaggccttgc gctgaaggat tacaccgatt tgggaagggt gaacacattg 1320
 gatttcgtct ttatgtttat ccctgtcgaa ccggcctacc tgttggcggt gcagaatgac 1380
 gcgggcttgt tccaagagt tttcgacaaa cggattatgc tggtcggccc cagtacgctg 1440
 ctggcgactt tgaggacggt ggcgaatatt tggcgcaacg aacagcaaaa tcagaacgca 1500
 ctggcgattg cggacgaagg cggcaagctg tacgacaagt ttgtcggcgt cgtacagacg 1560
 ctcgaaagcg tcggcaaaagg catcgatcag gcgcaaagca gttttcagac ggcattcaag 1620
 caacttgccg aaggcgcgcg gaatctggtc ggacgcgcgg agaaaactgcg tctgttgggc 1680
 gtgaaggcag gcaacaact tcaacgggat ttggtcgagc gttccaatga aacaacggcg 1740
 ttgtcggaat ctttgaata cgcggcagaa gatgaagcag tctga 1785

<210> 14
 <211> 594
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB2050 protein sequence

<400> 14
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 Val Leu Phe Thr Trp Leu Leu Met Lys Gly Arg Phe Gln Gly Glu Phe
 20 25 30
 Ala Gly Leu Asn Ala His Leu Ala Glu Lys Ala Ala Arg Cys Asp Phe
 35 40 45
 Val Glu Gln Ala His Gly Lys Thr Val Ser Glu Leu Ala Val Leu Asp
 50 55 60
 Gly Lys Tyr Arg His Leu Gln Asp Glu Asn Tyr Ala Leu Gly Asn Arg
 65 70 75 80
 Phe Ser Ala Ala Glu Lys Gln Ile Ala His Leu Gln Glu Lys Glu Ala
 85 90 95

Glu Ser Ala Arg Leu Lys Gln Ser Tyr Ile Glu Leu Gln Glu Lys Ala
 100 105 110
 Gln Gly Leu Ala Val Glu Asn Glu Arg Leu Ala Thr Gln Leu Gly Gln
 115 120 125
 Glu Arg Lys Ala Phe Ala Asp Gln Tyr Ala Leu Glu Arg Gln Ile Arg
 130 135 140
 Gln Arg Ile Glu Thr Asp Leu Glu Glu Ser Arg Gln Thr Val Arg Asp
 145 150 155 160
 Val Gln Asn Asp Leu Ser Asp Val Gly Asn Arg Phe Ala Ala Ala Glu
 165 170 175
 Lys Gln Ile Ala His Leu Gln Glu Lys Glu Ala Glu Ala Glu Arg Leu
 180 185 190
 Arg Gln Ser His Thr Glu Leu Gln Glu Lys Ala Gln Gly Leu Ala Val
 195 200 205
 Glu Asn Glu Arg Leu Ala Thr Gln Ile Glu Gln Glu Arg Leu Ala Ser
 210 215 220
 Glu Glu Lys Leu Ser Leu Leu Gly Glu Ala Arg Lys Ser Leu Ser Asp
 225 230 235 240
 Gln Phe Gln Asn Leu Ala Asn Thr Ile Leu Glu Glu Lys Ser Arg Arg
 245 250 255
 Phe Thr Glu Gln Asn Arg Glu Gln Leu His Gln Val Leu Asn Pro Leu
 260 265 270
 Asn Glu Arg Ile His Gly Phe Gly Glu Leu Val Lys Gln Thr Tyr Asp
 275 280 285
 Lys Glu Ser Arg Glu Arg Leu Thr Leu Glu Asn Glu Leu Lys Arg Leu
 290 295 300
 Gln Gly Leu Asn Ala Gln Leu His Ser Glu Ala Lys Ala Leu Thr Asn
 305 310 315 320
 Ala Leu Thr Gly Thr Gln Asn Lys Val Gln Gly Asn Trp Gly Glu Met
 325 330 335
 Ile Leu Glu Thr Val Leu Glu Asn Ser Gly Leu Gln Lys Gly Arg Glu
 340 345 350
 Tyr Val Val Gln Ala Ala Ser Val Arg Lys Glu Glu Asp Gly Gly Thr
 355 360 365
 Arg Arg Leu Gln Pro Asp Val Leu Val Asn Leu Pro Asp Asn Lys Gln
 370 375 380
 Ile Val Ile Asp Ser Lys Val Ser Leu Thr Ala Tyr Val Arg Tyr Thr
 385 390 395 400
 Gln Ala Ala Asp Ala Asp Thr Ala Ala Arg Glu Leu Ala Ala His Val
 405 410 415
 Ala Ser Ile Arg Ala His Met Lys Gly Leu Ser Leu Lys Asp Tyr Thr

420 425 430
 Asp Leu Glu Gly Val Asn Thr Leu Asp Phe Val Phe Met Phe Ile Pro
 435 440 445
 Val Glu Pro Ala Tyr Leu Leu Ala Leu Gln Asn Asp Ala Gly Leu Phe
 450 455 460
 Gln Glu Cys Phe Asp Lys Arg Ile Met Leu Val Gly Pro Ser Thr Leu
 465 470 475 480
 Leu Ala Thr Leu Arg Thr Val Ala Asn Ile Trp Arg Asn Glu Gln Gln
 485 490 495
 Asn Gln Asn Ala Leu Ala Ile Ala Asp Glu Gly Gly Lys Leu Tyr Asp
 500 505 510
 Lys Phe Val Gly Phe Val Gln Thr Leu Glu Ser Val Gly Lys Gly Ile
 515 520 525
 Asp Gln Ala Gln Ser Ser Phe Gln Thr Ala Phe Lys Gln Leu Ala Glu
 530 535 540
 Gly Arg Gly Asn Leu Val Gly Arg Ala Glu Lys Leu Arg Leu Leu Gly
 545 550 555 560
 Val Lys Ala Gly Lys Gln Leu Gln Arg Asp Leu Val Glu Arg Ser Asn
 565 570 575
 Glu Thr Thr Ala Leu Ser Glu Ser Leu Glu Tyr Ala Ala Glu Asp Glu
 580 585 590

Ala Val

<210> 15
 <211> 561
 <212> ---DNA
 <213> Neisseria meningitidis serogroup B NMB1335 DNA sequence

<400> 15
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 accgataaaa tcggacgggc aagtaccgtt ttcaacatac tgggcaaaaa cgaccgtatc 120
 gaagtgggaag gattcgacga tcccgcggtt caaggggttg cctgttatat ttcgtatgca 180
 aaaaaaggcg gcttgaagga aatgggtcaat ttggaagagg acgcgtccga cgcatacggtt 240
 tcgtgcgttc agacggcatc ttcgatttct tttgacgaaa ccgcggtgcg caaaccgaaa 300
 gaagttttca aacacgggtgc gagcttcgcg ttcaagagcc ggcagattgt ccgttattac 360
 gaccccaaac gcaaaacctt cgcctatttg gtgtacagcg ataaaatcat ccaaggctcg 420
 ccgaaaaatt ccttaagcgc ggtttcctgt ttcggcgggc gcataccgca aaccgatggg 480
 gtgcaagccg atacttccgg caacctgctt gccggcgccct gcatgatttc caaccgata 540
 gaaaatctcg acaaacgctg a 561

<210> 16
 <211> 186
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB1335 protein sequence

<400> 16
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 1 5 10 15

Gly Ser Gly Glu Thr Asp Lys Ile Gly Arg Ala Ser Thr Val Phe Asn
 20 25 30
 Ile Leu Gly Lys Asn Asp Arg Ile Glu Val Glu Gly Phe Asp Asp Pro
 35 40 45
 Asp Val Gln Gly Val Ala Cys Tyr Ile Ser Tyr Ala Lys Lys Gly Gly
 50 55 60
 Leu Lys Glu Met Val Asn Leu Glu Glu Asp Ala Ser Asp Ala Ser Val
 65 70 75 80
 Ser Cys Val Gln Thr Ala Ser Ser Ile Ser Phe Asp Glu Thr Ala Val
 85 90 95
 Arg Lys Pro Lys Glu Val Phe Lys His Gly Ala Ser Phe Ala Phe Lys
 100 105 110
 Ser Arg Gln Ile Val Arg Tyr Tyr Asp Pro Lys Arg Lys Thr Phe Ala
 115 120 125
 Tyr Leu Val Tyr Ser Asp Lys Ile Ile Gln Gly Ser Pro Lys Asn Ser
 130 135 140
 Leu Ser Ala Val Ser Cys Phe Gly Gly Gly Ile Pro Gln Thr Asp Gly
 145 150 155 160
 Val Gln Ala Asp Thr Ser Gly Asn Leu Leu Ala Gly Ala Cys Met Ile
 165 170 175
 Ser Asn Pro Ile Glu Asn Leu Asp Lys Arg
 180 185

<210> 17
 <211> 693
 <212> DNA
 <213> *Neisseria meningitidis* serogroup B NMB2035 DNA sequence

<400> 17
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 cgtgccaaaga aaaacctgat tatccgcccc gccggcacac ataccgtccg catcagcgtc 120
 ccaccctgct tctccgtctc cgctctaaac cgctggctgt atgaaaacga agccgtcctg 180
 cggcaaacac tggcgaaaac accgccgccg caaactgccg aaaaccggct gcccgaaatcc 240
 atcctcttcc acggcagaca gcttgccctc accgcccac aagacacgca aatcctgctg 300
 atgccgtctg aaatccgtgt tcccgaaggc gcacccgaaa aacagcttgc gctgctgcgg 360
 gactttttgg aacggcaggc gcacagttag ctgattcccc gcctcgaacg ccacgcccgc 420
 accacacaac tgttccccgc ctctcctcgt ctgacctctg ccaaaacctt ctggggcgtg 480
 tgccgcaaaa ccacaggcat acgcttcaac tggcggtgtg tcggcgccacc ggaatacgtt 540
 gccgactatg tctgcataca cgaactctgc cacctcgccc atcccgacca cagccccgcc 600
 ttttggaac tgaccgcgcg ctctcgcccc tacacgccc aagcgaaaca gtgggtcaaa 660
 atccacggca gggaactttt cgccttaggc tga 693

<210> 18
 <211> 230
 <212> PRT
 <213> *Neisseria meningitidis* serogroup B NMB2035 protein sequence

<400> 18
 Met Thr Ala Phe Val His Thr Leu Ser Asp Gly Met Glu Leu Thr Val
 1 5 10 15

Glu Ile Lys Arg Arg Ala Lys Lys Asn Leu Ile Ile Arg Pro Ala Gly
 20 25 30
 Thr His Thr Val Arg Ile Ser Val Pro Pro Cys Phe Ser Val Ser Ala
 35 40 45
 Leu Asn Arg Trp Leu Tyr Glu Asn Glu Ala Val Leu Arg Gln Thr Leu
 50 55 60
 Ala Lys Thr Pro Pro Pro Gln Thr Ala Glu Asn Arg Leu Pro Glu Ser
 65 70 75 80
 Ile Leu Phe His Gly Arg Gln Leu Ala Leu Thr Ala His Gln Asp Thr
 85 90 95
 Gln Ile Leu Leu Met Pro Ser Glu Ile Arg Val Pro Glu Gly Ala Pro
 100 105 110
 Glu Lys Gln Leu Ala Leu Leu Arg Asp Phe Leu Glu Arg Gln Ala His
 115 120 125
 Ser Tyr Leu Ile Pro Arg Leu Glu Arg His Ala Arg Thr Thr Gln Leu
 130 135 140
 Phe Pro Ala Ser Ser Ser Leu Thr Ser Ala Lys Thr Phe Trp Gly Val
 145 150 155 160
 Cys Arg Lys Thr Thr Gly Ile Arg Phe Asn Trp Arg Leu Val Gly Ala
 165 170 175
 Pro Glu Tyr Val Ala Asp Tyr Val Cys Ile His Glu Leu Cys His Leu
 180 185 190
 Ala His Pro Asp His Ser Pro Ala Phe Trp Glu Leu Thr Arg Arg Phe
 195 200 205
 Ala Pro Tyr Thr Pro Lys Ala Lys Gln Trp Leu Lys Ile His Gly Arg
 210 215 220

Glu Leu Phe Ala Leu Gly
 225 230

<210> 19
 <211> 1257
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB1351 DNA sequence

<400> 19
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 cagcctgccg atgccgtcct ctccgcctat ttccgcgaac acaaaaagct cggcagtcaa 120
 gatcgccacg aaatcgccga aaccgccttt gccgcgctgc gccactatca aaaaatcagt 180
 accgccctac gccgtccgca cgcgcgagccg cgcaaagccg ctctcgccgc actggttctc 240
 ggcagaagca ccaacatcag ccaaatacaa gacctgcttg atgaagaaga aacagcggtc 300
 ctcggaatt tgaaagcccg taaaaccgag ttttcagaca gctgaatac cgccgcagaa 360
 ttgccgcaat ggctggtgga acaactgaaa cagcattggc gcgaagaaga aatcctcgct 420
 ttcggccgca gcatcaacca gctgccccg ctgcacatcc gcgtaaacac ttgaaaggc 480
 aaacgcgata aagtgtgccc gctgttgcaa gccgaaagtg ccgatgcaga ggcaacgcct 540
 tattcgctt ggggcatccg cctgaaaaac aaaatcgcg ctaacaaaca cgaactgttt 600
 ttagacggca cactggaagt ccaagacgaa ggcagccagc tgcttgccct attggtgggc 660
 gcaaaacgag gcgaaatcat tgtcgatttc tgtgcccgtg ccggcggtaa aaccttggt 720
 gtcggtgcgc aaatggcgaa caaaggcaga atctacgcct tcgatatcgc cgaaaaacgc 780

cttgccaacc	tcaaaccgcg	tatgaccgcg	gccggactga	ccaatatcca	ccccgaacgc	840
atcggcagcg	aacacgatgc	cogtatcgcc	cgactggcag	gcaaagccga	ccgtgtgttg	900
gtggacgcgc	cctgctccgg	tttgggcact	ttacgccgca	atccccgacct	caaataccgc	960
caatccgccg	aaaccgtcgc	caaccttttg	gaacagcaac	acagcatcct	cgatgccgcc	1020
tccaaactgg	taaaaccgca	aggacgtttg	gtgtacgcc	cttgcagcat	cctgcccga	1080
gaaaacgagc	tgcaagtcga	acgtttcctg	tccgaacatc	ccgaatttga	acccgtcaac	1140
tgcgccgaac	tgcttgccgg	tttgaaaatc	gatttgata	ccggcaaata	cctgcgcctc	1200
aactccgccc	gacaccaaac	cgacggcttc	ttcgccgccg	tattgcaacg	caaataa	1257

<210> 20

<211> 418

<212> PRT

<213> Neisseria meningitidis serogroup B NMB1351 protein sequence

<400> 20

Met	Asn	Ala	Ala	Gln	Leu	Asp	His	Thr	Ala	Lys	Val	Leu	Ala	Glu	Met
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Leu	Thr	Phe	Lys	Gln	Pro	Ala	Asp	Ala	Val	Leu	Ser	Ala	Tyr	Phe	Arg
			20					25					30		

Glu	His	Lys	Lys	Leu	Gly	Ser	Gln	Asp	Arg	His	Glu	Ile	Ala	Glu	Thr
		35					40					45			

Ala	Phe	Ala	Ala	Leu	Arg	His	Tyr	Gln	Lys	Ile	Ser	Thr	Ala	Leu	Arg
	50					55					60				

Arg	Pro	His	Ala	Gln	Pro	Arg	Lys	Ala	Ala	Leu	Ala	Ala	Leu	Val	Leu
65					70					75					80

Gly	Arg	Ser	Thr	Asn	Ile	Ser	Gln	Ile	Lys	Asp	Leu	Leu	Asp	Glu	Glu
				85					90					95	

Glu	Thr	Ala	Phe	Leu	Gly	Asn	Leu	Lys	Ala	Arg	Lys	Thr	Glu	Phe	Ser
		100						105					110		

Asp	Ser	Leu	Asn	Thr	Ala	Ala	Glu	Leu	Pro	Gln	Trp	Leu	Val	Glu	Gln
		115					120					125			

Leu	Lys	Gln	His	Trp	Arg	Glu	Glu	Glu	Ile	Leu	Ala	Phe	Gly	Arg	Ser
	130					135					140				

Ile	Asn	Gln	Pro	Ala	Pro	Leu	Asp	Ile	Arg	Val	Asn	Thr	Leu	Lys	Gly
145				150						155					160

Lys	Arg	Asp	Lys	Val	Leu	Pro	Leu	Leu	Gln	Ala	Glu	Ser	Ala	Asp	Ala
			165						170					175	

Glu	Ala	Thr	Pro	Tyr	Ser	Pro	Trp	Gly	Ile	Arg	Leu	Lys	Asn	Lys	Ile
		180						185					190		

Ala	Leu	Asn	Lys	His	Glu	Leu	Phe	Leu	Asp	Gly	Thr	Leu	Glu	Val	Gln
		195					200					205			

Asp	Glu	Gly	Ser	Gln	Leu	Leu	Ala	Leu	Leu	Val	Gly	Ala	Lys	Arg	Gly
	210				215						220				

Glu	Ile	Ile	Val	Asp	Phe	Cys	Ala	Gly	Ala	Gly	Gly	Lys	Thr	Leu	Ala
225				230						235					240

Val	Gly	Ala	Gln	Met	Ala	Asn	Lys	Gly	Arg	Ile	Tyr	Ala	Phe	Asp	Ile
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<212> PRT
 <213> Neisseria meningitidis serogroup B NMB1574 protein sequence

<400> 22
 Met Gln Val Tyr Tyr Asp Lys Asp Ala Asp Leu Ser Leu Ile Lys Gly
 1 5 10 15
 Lys Thr Val Ala Ile Ile Gly Tyr Gly Ser Gln Gly His Ala His Ala
 20 25 30
 Ala Asn Leu Lys Asp Ser Gly Val Asn Val Val Ile Gly Leu Arg Gln
 35 40 45
 Gly Ser Ser Trp Lys Lys Ala Glu Ala Ala Gly His Val Val Lys Thr
 50 55 60
 Val Ala Glu Ala Thr Lys Glu Ala Asp Val Val Met Leu Leu Leu Pro
 65 70 75 80
 Asp Glu Thr Met Pro Ala Val Tyr His Ala Glu Val Thr Ala Asn Leu
 85 90 95
 Lys Glu Gly Ala Thr Leu Ala Phe Ala His Gly Phe Asn Val His Tyr
 100 105 110
 Asn Gln Ile Val Pro Arg Ala Asp Leu Asp Val Ile Met Val Ala Pro
 115 120 125
 Lys Gly Pro Gly His Thr Val Arg Ser Glu Tyr Lys Arg Gly Gly Gly
 130 135 140
 Val Pro Ser Leu Ile Ala Val Tyr Gln Asp Asn Ser Gly Lys Ala Lys
 145 150 155 160
 Asp Ile Ala Leu Ser Tyr Ala Ala Ala Asn Gly Gly Thr Lys Gly Gly
 165 170 175
 Val Ile Glu Thr Thr Phe Arg Glu Glu Thr Glu Thr Asp Leu Phe Gly
 180 185 190
 Glu Gln Ala Val Leu Cys Gly Gly Val Val Glu Leu Ile Lys Ala Gly
 195 200 205
 Phe Glu Thr Leu Thr Glu Ala Gly Tyr Ala Pro Glu Met Ala Tyr Phe
 210 215 220
 Glu Cys Leu His Glu Met Lys Leu Ile Val Asp Leu Ile Phe Glu Gly
 225 230 235 240
 Gly Ile Ala Asn Met Asn Tyr Ser Ile Ser Asn Asn Ala Glu Tyr Gly
 245 250 255
 Glu Tyr Val Thr Gly Pro Glu Val Val Asn Ala Ser Ser Lys Glu Ala
 260 265 270
 Met Arg Asn Ala Leu Lys Arg Ile Gln Thr Gly Glu Tyr Ala Lys Met
 275 280 285
 Phe Ile Gln Glu Gly Asn Val Asn Tyr Ala Ser Met Thr Ala Arg Arg
 290 295 300

Arg Leu Asn Ala Asp His Gln Val Glu Lys Val Gly Ala Gln Leu Arg
 305 310 315 320

Ala Met Met Pro Trp Ile Thr Ala Asn Lys Leu Val Asp Gln Asp Lys
 325 330 335

Asn

<210> 23
 <211> 693
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB1298 DNA sequence

<400> 23
 atgaaactta tcaaatacct gcaatatcaa ggcataaggaa gccgcaagca gtgccaatgg 60
 ctgattgccg gcggttatgt tttcatcaac ggaacctgca tggacgacac cgatgcagac 120
 atcgattcct catccgtcga aacgttggat attgacgggg aagcagtaac cgtcgttccc 180
 gaaccctatt tctacatcat gctcaacaag cctgaagatt acgaaacttc gcacaaaccc 240
 aagcactacc gcagcgtatt cagcctgttc cccgacaata tgcggaacat cgatatgcag 300
 gcggtcggca ggctggatgc agatacgacc ggcgtattgc tgattaccaa cgacggcaaa 360
 ctgaaccaca gcctgacttc gccgagcaga aaaattccca agctgtacga agtaacgctc 420
 aaacacccca caggagaaac gctctgcgaa accttgaaaa acggcggtgct gctccacgac 480
 gaaaacgaaa ccgtttgtgc cgccgatgcc gttttgaaaa acccgaccac cctgctgctg 540
 accattaccg aaggaaaata ccaccaagtc aaacgcgatga tcgccgccgc cggcaaccgc 600
 gtgcaacacc ttcacgcgcg gcgattcgca catctggaaa cagaaaacct caaacccggg 660
 gaatggaaat ttatcgaatg tccaaaattc tga 693

<210> 24
 <211> 230
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB1298 protein sequence

<400> 24
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 1 5 10 15
 Gln Cys Gln Trp Leu Ile Ala Gly Gly Tyr Val Phe Ile Asn Gly Thr
 20 25 30
 Cys Met Asp Asp Thr Asp Ala Asp Ile Asp Ser Ser Ser Val Glu Thr
 35 40 45
 Leu Asp Ile Asp Gly Glu Ala Val Thr Val Val Pro Glu Pro Tyr Phe
 50 55 60
 Tyr Ile Met Leu Asn Lys Pro Glu Asp Tyr Glu Thr Ser His Lys Pro
 65 70 75 80
 Lys His Tyr Arg Ser Val Phe Ser Leu Phe Pro Asp Asn Met Arg Asn
 85 90 95
 Ile Asp Met Gln Ala Val Gly Arg Leu Asp Ala Asp Thr Thr Gly Val
 100 105 110
 Leu Leu Ile Thr Asn Asp Gly Lys Leu Asn His Ser Leu Thr Ser Pro
 115 120 125
 Ser Arg Lys Ile Pro Lys Leu Tyr Glu Val Thr Leu Lys His Pro Thr
 130 135 140

Gly Glu Thr Leu Cys Glu Thr Leu Lys Asn Gly Val Leu Leu His Asp
145 150 155 160

Glu Asn Glu Thr Val Cys Ala Ala Asp Ala Val Leu Lys Asn Pro Thr
165 170 175

Thr Leu Leu Leu Thr Ile Thr Glu Gly Lys Tyr His Gln Val Lys Arg
180 185 190

Met Ile Ala Ala Ala Gly Asn Arg Val Gln His Leu His Arg Arg Arg
195 200 205

Phe Ala His Leu Glu Thr Glu Asn Leu Lys Pro Gly Glu Trp Lys Phe
210 215 220

Ile Glu Cys Pro Lys Phe
225 230

<210> 25
<211> 900
<212> DNA
<213> Neisseria meningitidis serogroup B NMB1856 DNA sequence

<400> 25
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agcogtgccg cggagcagtt ggcgatggca aattctgccg taagccgcat cgtcaaacgg 120
ctggaggaaa agttgggtgt gaacctgctc aaccgcacca cgcggaact cagtctgacg 180
gaagaaggcg cgcaatattt ccgcccgcgc cagagaatcc tgcaagaaat ggcagcggcg 240
gaaaccgaaa tgctggcagt gcacgaaata ccgcaaggcg tgttgagcgt ggattccgcg 300
atgccgatgg tgctgcatct gctggcgccg ctggcagcaa aattcaacga acgctatccg 360
catatccgac tttcgtctgt ttcttccgaa ggctatatca atctgattga acgcaaagtc 420
gatattgcct tacgggcccgc agaattggac gattccgggc tgcgtgcacg ccatctgttt 480
gacagccgct tccgcgtaat cgccagtcct gaatacctgg caaaacacgg cagccgcgaa 540
tctacagaag agcttgccgc ccaccaatgt ttaggcttca ccgaaccggt ttctctaaat 600
acatgggccc ttttagatgc gcagggaat ccctataaga tttcaccgca ctttaccgcc 660
agcagcgggt aaatcttacg ctccgttgtc ctttcagggt gcggtattgt ttgcttatca 720
gattttttgg ttgacaacga catcgctgaa ggaaagttaa tccccctgct cgccgaacaa 780
acctccgata aaacacaccc ctttaatgct gtttattaca gcgataaagc cgtcaatctc 840
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<210> 26
<211> 299
<212> PRT
<213> Neisseria meningitidis serogroup B NMB1856 protein sequence

<400> 26
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Ser Gly Ser Phe Ser Arg Ala Ala Glu Gln Leu Ala Met Ala Asn Ser
20 25 30
Ala Val Ser Arg Ile Val Lys Arg Leu Glu Glu Lys Leu Gly Val Asn
35 40 45
Leu Leu Asn Arg Thr Thr Arg Gln Leu Ser Leu Thr Glu Glu Gly Ala
50 55 60
Gln Tyr Phe Arg Arg Ala Gln Arg Ile Leu Gln Glu Met Ala Ala Ala
65 70 75 80

Glu Thr Glu Met Leu Ala Val His Glu Ile Pro Gln Gly Val Leu Ser
 85 90 95
 Val Asp Ser Ala Met Pro Met Val Leu His Leu Leu Ala Pro Leu Ala
 100 105 110
 Ala Lys Phe Asn Glu Arg Tyr Pro His Ile Arg Leu Ser Leu Val Ser
 115 120 125
 Ser Glu Gly Tyr Ile Asn Leu Ile Glu Arg Lys Val Asp Ile Ala Leu
 130 135 140
 Arg Ala Gly Glu Leu Asp Asp Ser Gly Leu Arg Ala Arg His Leu Phe
 145 150 155 160
 Asp Ser Arg Phe Arg Val Ile Ala Ser Pro Glu Tyr Leu Ala Lys His
 165 170 175
 Gly Thr Pro Gln Ser Thr Glu Glu Leu Ala Gly His Gln Cys Leu Gly
 180 185 190
 Phe Thr Glu Pro Gly Ser Leu Asn Thr Trp Ala Val Leu Asp Ala Gln
 195 200 205
 Gly Asn Pro Tyr Lys Ile Ser Pro His Phe Thr Ala Ser Ser Gly Glu
 210 215 220
 Ile Leu Arg Ser Leu Cys Leu Ser Gly Cys Gly Ile Val Cys Leu Ser
 225 230 235 240
 Asp Phe Leu Val Asp Asn Asp Ile Ala Glu Gly Lys Leu Ile Pro Leu
 245 250 255
 Leu Ala Glu Gln Thr Ser Asp Lys Thr His Pro Phe Asn Ala Val Tyr
 260 265 270
 Tyr Ser Asp Lys Ala Val Asn Leu Arg Leu Arg Val Phe Leu Asp Phe
 275 280 285
 Leu Val Glu Glu Leu Gly Asn Asn Leu Cys Gly
 290 295

<210> 27

<211> 696

<212> DNA

<213> *Neisseria meningitidis* serogroup B NMB0119 DNA sequence

<400> 27

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ggtgaataca	aactccctga	aaacaaaatc	gaccatacat	ttgcaaacaa	atccctctat	180
ttcggagagc	aggcaaaaaa	gtggcggttac	gacaatacga	taaaaaattg	gtttgaaatg	240
tggggacacc	ccttagacga	aaatggattg	ggcggtgcat	ttgaaaaatc	cctgggttcaa	300
accaactggg	ctgctacaca	gggcaacact	atcgacaatc	ccgacaagtt	cacacaaccc	360
gagcacatcg	ataattttct	ctaccacatc	gaaaaactgc	gtccgaaagt	catactcttc	420
atgggcagca	ggttggcgga	ttttctgaac	aacaaaaatg	tactgccacg	cttcgagcag	480
ttggtcggta	agcagaccaa	accgctggag	acggtgcaaa	aagaatttga	cggtacacgt	540
ttcaatgtca	aattccaatc	gtttgaagat	tgcgagtgcg	tctgctttcc	ccatcccagt	600
gccagtcgcg	gtctatctta	cgattacatc	gccttgtttg	cgctgaaat	gaaccggatt	660
ttatcggact	ttaaaacaac	acgcggattc	aaataa			696

<210> 28
 <211> 231
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB0119 protein sequence

<400> 28
 Met Met Lys Asp Leu Asn Leu Ser Asn Ser Leu Phe Lys Gly Tyr Asn
 1 5 10 15
 Asp Lys His Gly Leu Met Ile Cys Gly Tyr Glu Trp Gly Trp Ser Lys
 20 25 30
 Ala Asp Glu Ala Ala Tyr Val Ala Gly Glu Tyr Lys Leu Pro Glu Asn
 35 40 45
 Lys Ile Asp His Thr Phe Ala Asn Lys Ser Leu Tyr Phe Gly Glu Gln
 50 55 60
 Ala Lys Lys Trp Arg Tyr Asp Asn Thr Ile Lys Asn Trp Phe Glu Met
 65 70 75 80
 Trp Gly His Pro Leu Asp Glu Asn Gly Leu Gly Gly Ala Phe Glu Lys
 85 90 95
 Ser Leu Val Gln Thr Asn Trp Ala Ala Thr Gln Gly Asn Thr Ile Asp
 100 105 110
 Asn Pro Asp Lys Phe Thr Gln Pro Glu His Ile Asp Asn Phe Leu Tyr
 115 120 125
 His Ile Glu Lys Leu Arg Pro Lys Val Ile Leu Phe Met Gly Ser Arg
 130 135 140
 Leu Ala Asp Phe Leu Asn Asn Gln Asn Val Leu Pro Arg Phe Glu Gln
 145 150 155 160
 Leu Val Gly Lys Gln Thr Lys Pro Leu Glu Thr Val Gln Lys Glu Phe
 165 170 175
 Asp Gly Thr Arg Phe Asn Val Lys Phe Gln Ser Phe Glu Asp Cys Glu
 180 185 190
 Val Val Cys Phe Pro His Pro Ser Ala Ser Arg Gly Leu Ser Tyr Asp
 195 200 205
 Tyr Ile Ala Leu Phe Ala Pro Glu Met Asn Arg Ile Leu Ser Asp Phe
 210 215 220
 Lys Thr Thr Arg Gly Phe Lys
 225 230

<210> 29
 <211> 1065
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB1705 DNA sequence

<400> 29
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 caatatgtct atgatgtttc aaaagcattg gggcttcggg gctgcacaat gttaccgcc 120
 gtcaataaaa ataatgaatt gatgcacagg cgattttccg aagtttcttc cgttttcaca 180
 acgcgccttc acacgctcaa cgggctgttt tcgctctacg cacttaccgc ctttatccgg 240


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aaaaaccgca tttcccacct gatgatacac accggcaaaa ttgccgcctt atccatactt 300
ttgaaaaaac tgaccggggt gcgcctgata tttgtcaaac ataatgtcgt cgccaacaaa 360
accgattttt accaccgcct gatacagaaa aacacagacc gctttatttg cgtttcccgt 420
ctggtttacg atgtgcaaac cgccgacaat ccctttaaag aaaaataaccg gattgttcat 480
aacggtatcg ataccggccg tttccctccc tctcaagaaa aacccgacag ccgttttttt 540
accgtcgctt acgcccggcag gatcagtcga gaaaaaggat tggaaaacct gattgaagcc 600
tgtgtgatac tgcacgcgaa atatacctcaa atcagggtca aattggcagg ggacggacat 660
ccggattata tgtgccgcct gaagcgggac gtatctgctt caggagcaga accatttggt 720
tcttttgaag ggtttacga aaaacttgct tctgtttacc gccaaagcga tgtcgtgggt 780
ttgccagcc tcgtcccga ggcattcggg ttgtcattat gcgaggcgat gtactgccga 840
acggcgggtga tttccaatac tttgggggcg caaaaggaaa ttgtcgaaca tcatcaatcg 900
gggattctgc tggacaggct gacacctgaa tctttggcgg acgaaatcga acgcctcgtc 960
ttgaaccctg aaacgaaaaa cgactggca acggcagctc atcaatgcgt cgccgccgct 1020
tttaccatca accataccgc cgacaaatta ttggatgcaa tataa 1065

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<210> 30
 <211> 354
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB1705 protein sequence

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<400> 30
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Gly Gly Gly Glu Gln Tyr Val Tyr Asp Val Ser Lys Ala Leu Gly Leu
20 25 30

Arg Gly Cys Thr Met Phe Thr Ala Val Asn Lys Asn Asn Glu Leu Met
35 40 45

His Arg Arg Phe Ser Glu Val Ser Ser Val Phe Thr Thr Arg Leu His
50 55 60

Thr Leu Asn Gly Leu Phe Ser Leu Tyr Ala Leu Thr Arg Phe Ile Arg
65 70 75 80

Lys Asn Arg Ile Ser His Leu Met Ile His Thr Gly Lys Ile Ala Ala
85 90 95

Leu Ser Ile Leu Leu Lys Lys Leu Thr Gly Val Arg Leu Ile Phe Val
100 105 110

Lys His Asn Val Val Ala Asn Lys Thr Asp Phe Tyr His Arg Leu Ile
115 120 125

Gln Lys Asn Thr Asp Arg Phe Ile Cys Val Ser Arg Leu Val Tyr Asp
130 135 140

Val Gln Thr Ala Asp Asn Pro Phe Lys Glu Lys Tyr Arg Ile Val His
145 150 155 160

Asn Gly Ile Asp Thr Gly Arg Phe Pro Pro Ser Gln Glu Lys Pro Asp
165 170 175

Ser Arg Phe Phe Thr Val Ala Tyr Ala Gly Arg Ile Ser Pro Glu Lys
180 185 190

Gly Leu Glu Asn Leu Ile Glu Ala Cys Val Ile Leu His Arg Lys Tyr
195 200 205

Pro Gln Ile Arg Leu Lys Leu Ala Gly Asp Gly His Pro Asp Tyr Met

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210 215 220

Cys Arg Leu Lys Arg Asp Val Ser Ala Ser Gly Ala Glu Pro Phe Val
 225 230 235 240

Ser Phe Glu Gly Phe Thr Glu Lys Leu Ala Ser Phe Tyr Arg Gln Ser
 245 250 255

Asp Val Val Val Leu Pro Ser Leu Val Pro Glu Ala Phe Gly Leu Ser
 260 265 270

Leu Cys Glu Ala Met Tyr Cys Arg Thr Ala Val Ile Ser Asn Thr Leu
 275 280 285

Gly Ala Gln Lys Glu Ile Val Glu His His Gln Ser Gly Ile Leu Leu
 290 295 300

Asp Arg Leu Thr Pro Glu Ser Leu Ala Asp Glu Ile Glu Arg Leu Val
 305 310 315 320

Leu Asn Pro Glu Thr Lys Asn Ala Leu Ala Thr Ala Ala His Gln Cys
 325 330 335

Val Ala Ala Arg Phe Thr Ile Asn His Thr Ala Asp Lys Leu Leu Asp
 340 345 350

Ala Ile

<210> 31
 <211> 1272
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB2065 DNA sequence

<400> 31

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ctgtggatag	cgtctttatc	caatggtgca	ttttatttgg	gcaatcatgg	aagcatggag	120
ggtttgaccg	ttttgatttt	ggggtcgata	tttgcttctt	tgatatacag	gtattgtgcg	180
gtctatgcga	attatgtttg	gttggcggcc	attgttttgc	tggtgctggt	gaagaagggtc	240
gtgcctgtcc	atgcggcact	ttggggcttg	gcgttggttg	ctttcagtgt	gaaagccgta	300
tacgtcgatg	aagcagggaa	tacatcggat	attgtgcgct	acggtgcagg	attttatttg	360
tggtatgccg	catttgcggt	tgccaccatc	ggtacgtttg	ccggaaagaa	taaggaaaga	420
aaagccgcat	cagcggcaga	cgggataaaa	atgacgtttg	ataaatggtt	gggcttgtca	480
aaactgccta	aaaatgaagc	aagaatgctg	ctacaatatg	tttcggaata	tacgcgcgtg	540
cagttgttga	cgcggggcgg	ggaagaaatg	ccggacgaag	tccgacagcg	ggcggacagg	600
ctggcgcaac	gccgtctgaa	cggcgagccg	gttgccctata	ttttaggtgt	gcgcgaattt	660
tatggcagac	gctttacagt	caatccgagc	gtgctgattc	cgcgccccga	aaccgaacat	720
ttggtcgaag	ccgtattggc	gcgcctgccc	gaaaacgggc	gcgtgtggga	tttggggacg	780
ggcagcggcg	cggttgccgt	aaccgtcgcg	ctcgaacgcc	ccgatgcgtt	tgtgcgcgca	840
tccgacatca	gcccgcccg	ccttgaaaacg	gcgcggaaaa	atgcggcgga	tttgggcgcg	900
cgggtcgaat	ttgcacacgg	ttcgtggttc	gacaccgata	tgccgtctga	agggaaatgg	960
gacatcatcg	tgtccaaccc	gccctatatc	gaaaacggcg	ataaacattt	gttgcaaggc	1020
gatttgcggt	ttgagccgca	aatcgcgctg	accgactttt	cagacggcct	aagctgcac	1080
cgcaccttgg	cgcaaggcgc	gcccgaccgt	ttggcggaag	gcggtttttt	attgctggaa	1140
cacggtttcg	atcagggcgc	ggcgggtgcgc	ggcgtgttgg	cggagaatgg	tttttcagga	1200
gtggaaaccc	tgccggattt	ggcgggtttg	gacagggtta	cgctggggaa	gtatatgaag	1260
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<210> 32
 <211> 423
 <212> PRT

<213> Neisseria meningitidis serogroup B NMB2065 protein sequence

<400> 32

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Val Ser Val Ala Leu Trp Ile Ala Ser Leu Ser Asn Val Ala Phe Tyr
20 25 30

Leu Gly Asn His Gly Ser Met Glu Gly Leu Thr Val Leu Ile Leu Gly
35 40 45

Ser Ile Phe Ala Ser Leu Asp Ile Arg Tyr Cys Ala Val Tyr Ala Asn
50 55 60

Tyr Val Trp Leu Ala Ala Ile Val Leu Leu Ala Leu Arg Lys Lys Val
65 70 75 80

Val Pro Val His Ala Ala Leu Trp Gly Leu Ala Leu Val Ala Phe Ser
85 90 95

Val Lys Ala Val Tyr Val Asp Glu Ala Gly Asn Thr Ser Asp Ile Val
100 105 110

Arg Tyr Gly Ala Gly Phe Tyr Leu Trp Tyr Ala Ala Phe Ala Val Ala
115 120 125

Thr Ile Gly Thr Phe Ala Gly Lys Asn Lys Glu Arg Lys Ala Ala Ser
130 135 140

Ala Ala Asp Gly Ile Lys Met Thr Phe Asp Lys Trp Leu Gly Leu Ser
145 150 155 160

Lys Leu Pro Lys Asn Glu Ala Arg Met Leu Leu Gln Tyr Val Ser Glu
165 170 175

Tyr Thr Arg Val Gln Leu Leu Thr Arg Gly Gly Glu Glu Met Pro Asp
180 185 190

Glu Val Arg Gln Arg Ala Asp Arg Leu Ala Gln Arg Arg Leu Asn Gly
195 200 205

Glu Pro Val Ala Tyr Ile Leu Gly Val Arg Glu Phe Tyr Gly Arg Arg
210 215 220

Phe Thr Val Asn Pro Ser Val Leu Ile Pro Arg Pro Glu Thr Glu His
225 230 235 240

Leu Val Glu Ala Val Leu Ala Arg Leu Pro Glu Asn Gly Arg Val Trp
245 250 255

Asp Leu Gly Thr Gly Ser Gly Ala Val Ala Val Thr Val Ala Leu Glu
260 265 270

Arg Pro Asp Ala Phe Val Arg Ala Ser Asp Ile Ser Pro Pro Ala Leu
275 280 285

Glu Thr Ala Arg Lys Asn Ala Ala Asp Leu Gly Ala Arg Val Glu Phe
290 295 300

Ala His Gly Ser Trp Phe Asp Thr Asp Met Pro Ser Glu Gly Lys Trp

305 310 315 320
 Asp Ile Ile Val Ser Asn Pro Pro Tyr Ile Glu Asn Gly Asp Lys His
 325 330 335
 Leu Leu Gln Gly Asp Leu Arg Phe Glu Pro Gln Ile Ala Leu Thr Asp
 340 345 350
 Phe Ser Asp Gly Leu Ser Cys Ile Arg Thr Leu Ala Gln Gly Ala Pro
 355 360 365
 Asp Arg Leu Ala Glu Gly Gly Phe Leu Leu Leu Glu His Gly Phe Asp
 370 375 380
 Gln Gly Ala Ala Val Arg Gly Val Leu Ala Glu Asn Gly Phe Ser Gly
 385 390 395 400
 Val Glu Thr Leu Pro Asp Leu Ala Gly Leu Asp Arg Val Thr Leu Gly
 405 410 415
 Lys Tyr Met Lys His Leu Lys
 420

<210> 33
 <211> 1170
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB0339 DNA sequence

<400> 33
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 ccttcgggat tttataaaaag cttggacgct ttggtcgacc gcaacagcgg gcgcgcggca 180
 agggagttag cggaagtcgt cgacggccgg ccgcaatcgt atgatttgaa cctcaccctc 240
 ggcaaaacttt accgccagcg tggcgaaaac gacaaaagcca tcaacataca ccggacaatg 300
 ctcgattctc ccgatacggg cggcgaaaag cgcgcgcgcg tcctgtttga attggcgcaa 360
 aactaccaa gtgcgggggt ggtcgatcgt gccgaacaga tttttttggg gctgcaagac 420
 ggtaaaatgg cgcgtagaag cagacagcac ctgctcaata tctaccaaca ggacagggat 480
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 gaaatcgccc agttttattg cgaacttgcc caagccgcgc tgttcaagtc caatttcgat 600
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 gccgccatcg agcagcaaaa ccatgcatac ttgagcatgg tcggcgagaa gctttacgaa 780
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 gtgtaccgcc tgctcggttt gaaactcagc gatatgaatc cggcttgga agccgatgcc 1020
 gacatgatgc gttcggttat cggacggcag ctacagcgca gcgtgatgta ccgttgccgc 1080
 aactgccact tcaaatccca agtctttttc tggcactgcc ccgcctgcaa caaatggcag 1140
 acgtttaccc cgaataaaat cgaagtttaa 1170

<210> 34
 <211> 389
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB0339 protein sequence

<400> 34
 Met Asp Asn Glu Leu Trp Ile Ile Leu Leu Pro Ile Ile Leu Leu Pro
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 Val Phe Phe Ala Met Gly Trp Phe Ala Ala Arg Val Asp Met Lys Thr
 20 25 30

Val Leu Lys Gln Ala Lys Ser Ile Pro Ser Gly Phe Tyr Lys Ser Leu
35 40 45
Asp Ala Leu Val Asp Arg Asn Ser Gly Arg Ala Ala Arg Glu Leu Ala
50 55 60
Glu Val Val Asp Gly Arg Pro Gln Ser Tyr Asp Leu Asn Leu Thr Leu
65 70 75 80
Gly Lys Leu Tyr Arg Gln Arg Gly Glu Asn Asp Lys Ala Ile Asn Ile
85 90 95
His Arg Thr Met Leu Asp Ser Pro Asp Thr Val Gly Glu Lys Arg Ala
100 105 110
Arg Val Leu Phe Glu Leu Ala Gln Asn Tyr Gln Ser Ala Gly Leu Val
115 120 125
Asp Arg Ala Glu Gln Ile Phe Leu Gly Leu Gln Asp Gly Lys Met Ala
130 135 140
Arg Glu Ala Arg Gln His Leu Leu Asn Ile Tyr Gln Gln Asp Arg Asp
145 150 155 160
Trp Glu Lys Ala Val Glu Thr Ala Arg Leu Leu Ser His Asp Asp Gln
165 170 175
Thr Tyr Gln Phe Glu Ile Ala Gln Phe Tyr Cys Glu Leu Ala Gln Ala
180 185 190
Ala Leu Phe Lys Ser Asn Phe Asp Val Ala Arg Phe Asn Val Gly Lys
195 200 205
Ala Leu Glu Ala Asn Lys Lys Cys Thr Arg Ala Asn Met Ile Leu Gly
210 215 220
Asp Ile Glu His Arg Gln Gly Asn Phe Pro Ala Ala Val Glu Ala Tyr
225 230 235 240
Ala Ala Ile Glu Gln Gln Asn His Ala Tyr Leu Ser Met Val Gly Glu
245 250 255
Lys Leu Tyr Glu Ala Tyr Ala Ala Gln Gly Lys Pro Glu Glu Gly Leu
260 265 270
Asn Arg Leu Thr Gly Tyr Met Gln Thr Phe Pro Glu Leu Asp Leu Ile
275 280 285
Asn Val Val Tyr Glu Lys Ser Leu Leu Leu Lys Cys Glu Lys Glu Ala
290 295 300
Ala Gln Thr Ala Val Glu Leu Val Arg Arg Lys Pro Asp Leu Asn Gly
305 310 315 320
Val Tyr Arg Leu Leu Gly Leu Lys Leu Ser Asp Met Asn Pro Ala Trp
325 330 335
Lys Ala Asp Ala Asp Met Met Arg Ser Val Ile Gly Arg Gln Leu Gln
340 345 350

Arg Ser Val Met Tyr Arg Cys Arg Asn Cys His Phe Lys Ser Gln Val
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Phe Phe Trp His Cys Pro Ala Cys Asn Lys Trp Gln Thr Phe Thr Pro
 370 375 380

Asn Lys Ile Glu Val
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<210> 35
 <211> 3606
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB0401 DNA sequence

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 accaaagccg gcggcggtgga tgcgctgatg cagcagtttt cactctccag cgaagaaggc 240
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 tccctcttcg tcaatgctgc cgcctggggc ctgctgatta ccggcaaaact gaccgccaca 420
 aacgacaaac aaatgagttc cgcactcagc cgcctgatca gcaaaggcgg cgcaccgctc 480
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 tatgtcgaag ccatccacgc catcggcaaa gatgcggcag gacaaggcgt ttacgaaggc 720
 aacggatatt ccgtcaaaact ttccgccatc catccgcgct actcgcgcac ccaacacggc 780
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 atcctgtttg aattgaacaa cctcaacgaa ctgcaacgcg aagtcttcgg tcccgtcctg 2760

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cgtgccgaaa	ccgtcccttac	cggaccgacc	ggcgagcgca	acagcatctc	atggcacgcg	3240
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gccgacttgg	aaggtctgct	gctggtcaac	ggcaaaccgc	aaaccgcgcg	catcagccac	3420
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gcactcatcc	gcatactccc	ttcggaaaac	ggactcgaca	tcctgcaagt	gtttgaagaa	3540
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gactga						3606

<210> 36

<211> 1201

<212> PRT

<213> Neisseria meningitidis serogroup B NMB0401 protein sequence

<400> 36

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Thr	Asp	Ala	Tyr	Arg	Arg	Asn	Glu	Ile	Glu	Ala	Val	Gln	Asp	Met	Leu
			20					25					30		

Gln	Arg	Ala	Gln	Met	Ser	Asp	Glu	Glu	Arg	Asn	Ala	Ala	Ser	Glu	Leu
		35					40					45			

Ala	Arg	Arg	Leu	Val	Thr	Gln	Val	Arg	Ala	Gly	Arg	Thr	Lys	Ala	Gly
	50					55					60				

Gly	Val	Asp	Ala	Leu	Met	His	Glu	Phe	Ser	Leu	Ser	Ser	Glu	Glu	Gly
65					70					75					80

Ile	Ala	Leu	Met	Cys	Leu	Ala	Glu	Ala	Leu	Leu	Arg	Ile	Pro	Asp	Asn
			85						90					95	

Ala	Thr	Arg	Asp	Arg	Leu	Ile	Ala	Asp	Lys	Ile	Ser	Asp	Gly	Asn	Trp
			100					105					110		

Lys	Ser	His	Leu	Asn	Asn	Ser	Pro	Ser	Leu	Phe	Val	Asn	Ala	Ala	Ala
		115					120					125			

Trp	Gly	Leu	Leu	Ile	Thr	Gly	Lys	Leu	Thr	Ala	Thr	Asn	Asp	Lys	Gln
	130					135					140				

Met	Ser	Ser	Ala	Leu	Ser	Arg	Leu	Ile	Ser	Lys	Gly	Gly	Ala	Pro	Leu
145					150					155					160

Ile	Arg	Gln	Gly	Val	Asn	Tyr	Ala	Met	Arg	Leu	Leu	Gly	Lys	Gln	Phe
			165						170					175	

Val	Thr	Gly	Gln	Thr	Ile	Glu	Glu	Ala	Leu	Gln	Asn	Gly	Lys	Glu	Arg
			180					185					190		

Glu	Lys	Met	Gly	Tyr	Arg	Phe	Ser	Phe	Asp	Met	Leu	Gly	Glu	Ala	Ala
		195					200					205			

Tyr Thr Gln Ala Asp Ala Asp Arg Tyr Tyr Arg Asp Tyr Val Glu Ala
210 215 220
Ile His Ala Ile Gly Lys Asp Ala Ala Gly Gln Gly Val Tyr Glu Gly
225 230 235 240
Asn Gly Ile Ser Val Lys Leu Ser Ala Ile His Pro Arg Tyr Ser Arg
245 250 255
Thr Gln His Gly Arg Val Met Gly Glu Leu Leu Pro Arg Leu Lys Glu
260 265 270
Leu Phe Leu Leu Gly Lys Lys Tyr Asp Ile Gly Ile Asn Ile Asp Ala
275 280 285
Glu Glu Ala Asn Arg Leu Glu Leu Ser Leu Asp Leu Met Glu Ala Leu
290 295 300
Val Ser Asp Pro Asp Leu Ala Gly Tyr Lys Gly Ile Gly Phe Val Val
305 310 315 320
Gln Ala Tyr Gln Lys Arg Cys Pro Phe Val Ile Asp Tyr Leu Ile Asp
325 330 335
Leu Ala Arg Arg Asn Asn Gln Lys Leu Met Ile Arg Leu Val Lys Gly
340 345 350
Ala Tyr Trp Asp Ser Glu Ile Lys Trp Ala Gln Val Asp Gly Leu Asn
355 360 365
Gly Tyr Pro Thr Tyr Thr Arg Lys Val His Thr Asp Ile Ser Tyr Leu
370 375 380
Ala Cys Ala Arg Lys Leu Leu Ser Ala Gln Asp Ala Val Phe Pro Gln
385 390 395 400
Phe Ala Thr His Asn Ala Tyr Thr Leu Gly Ala Ile Tyr Gln Met Gly
405 ~~410~~ 415
Lys Gly Lys Asp Phe Glu His Gln Cys Leu His Gly Met Gly Glu Thr
420 425 430
Leu Tyr Asp Gln Val Val Gly Pro Gln Asn Leu Gly Arg Arg Val Arg
435 440 445
Val Tyr Ala Pro Val Gly Thr His Glu Thr Leu Leu Ala Tyr Leu Val
450 455 460
Arg Arg Leu Leu Glu Asn Gly Ala Asn Ser Ser Phe Val Asn Gln Ile
465 470 475 480
Val Asp Glu Asn Ile Ser Ile Asp Thr Leu Ile Arg Ser Pro Phe Asp
485 490 495
Thr Ile Ala Glu Gln Gly Ile His Leu His Asn Ala Leu Pro Leu Pro
500 505 510
Arg Asp Leu Tyr Gly Lys Cys Arg Leu Asn Ser Gln Gly Val Asp Leu
515 520 525
Ser Asn Glu Asn Val Leu Gln Gln Leu Gln Glu Gln Met Asn Lys Ala

530	535	540
Ala Ala Gln Asp Phe His 545 550	Ala Ala Ser Ile Val 555	Asn Gly Lys Ala Arg 560
Asp Val Gly Glu Ala Gln Pro Ile Lys 565 570	Asn Pro Ala Asp His Asp 575	
Ile Val Gly Thr Val Ser Phe Ala Asp 580 585	Ala Ala Leu Ala Gln Glu Ala 590	
Val Gly Ala Ala Val Ala Ala Phe Pro Glu Trp Ser 595 600	Ala Thr Pro Ala 605	
Ala Glu Arg Ala Ala Cys Leu Arg Arg Phe Ala 610 615 620	Asp Leu Leu Glu Gln	
His Thr Pro Ala Leu Met Met Leu Ala Val 625 630 635	Arg Glu Ala Gly Lys Thr 640	
Leu Asn Asn Ala Ile Ala Glu Val Arg Glu Ala Val 645 650	Asp Phe Cys Arg 655	
Tyr Tyr Ala Asn Glu Ala Glu His Thr 660 665	Leu Pro Gln Asp Ala Lys Ala 670	
Val Gly Ala Ile Val Ala Ile Ser Pro Trp Asn Phe 675 680	Pro Leu Ala Ile 685	
Phe Thr Gly Glu Val Val Ser Ala Leu Ala Ala 690 695 700	Gly Asn Thr Val Ile 700	
Ala Lys Pro Ala Glu Gln Thr Ser Leu Ile 705 710 715	Ala Gly Tyr Ala Val Ser 720	
Leu Met His Glu Ala Gly Ile Pro Thr Ser 725 730	Ala Leu Gln Leu Val Leu 735	
Gly Ala Gly Asp Val Gly Ala Ala Leu Thr 740 745	Asn Asp Ala Arg Ile Gly 750	
Gly Val Ile Phe Thr Gly Ser Thr Glu Val 755 760	Ala Arg Leu Ile Asn Lys 765	
Ala Leu Ala Lys Arg Gly Asp Asn Pro Val 770 775	Leu Ile Ala Glu Thr Gly 780	
Gly Gln Asn Ala Met Ile Val Asp Ser Thr 785 790 795	Ala Leu Ala Glu Gln Val 800	
Cys Ala Asp Val Leu Asn Ser Ala Phe Asp 805 810	Ser Ala Gly Gln Arg Cys 815	
Ser Ala Leu Arg Ile Leu Cys Val Gln Glu 820 825	Asp Val Ala Asp Arg Met 830	
Leu Asp Met Ile Lys Gly Ala Met Asp 835 840	Glu Leu Val Val Gly Lys Pro 845	
Ile Gln Leu Thr Thr Asp Val Gly Pro Val 850 855	Ile Asp Ala Glu Ala Gln 860	

Gln Asn Leu Leu Asn His Ile Asn Lys Met Lys Gly Val Ala Lys Ser
 865 870 875 880
 Tyr His Glu Val Lys Thr Ala Ala Asp Val Asp Ser Lys Lys Ser Thr
 885 890 895
 Phe Val Arg Pro Ile Leu Phe Glu Leu Asn Asn Leu Asn Glu Leu Gln
 900 905 910
 Arg Glu Val Phe Gly Pro Val Leu His Val Val Arg Tyr Arg Ala Asp
 915 920 925
 Glu Leu Asp Asn Val Ile Asp Gln Ile Asn Ser Lys Gly Tyr Ala Leu
 930 935 940
 Thr His Gly Val His Ser Arg Ile Glu Gly Thr Val Arg His Ile Arg
 945 950 955 960
 Ser Arg Ile Glu Ala Gly Asn Val Tyr Val Asn Arg Asn Ile Val Gly
 965 970 975
 Ala Val Val Gly Val Gln Pro Phe Gly Gly His Gly Leu Ser Gly Thr
 980 985 990
 Gly Pro Lys Ala Gly Gly Ser Phe Tyr Leu Gln Lys Leu Thr Arg Ala
 995 1000 1005
 Gly Glu Trp Val Ala Pro Thr Leu Ser Gln Ile Gly Gln Ala Asp Glu
 1010 1015 1020
 Ala Ala Leu Lys Arg Leu Glu Ala Leu Val His Lys Leu Pro Phe Asn
 1025 1030 1035 1040
 Ala Glu Glu Lys Lys Ala Ala Ala Ala Ala Leu Gly His Ala Arg Ile
 1045 1050 1055
 Arg Thr Leu Arg Arg Ala Glu Thr ~~Val~~ Leu Thr Gly Pro Thr Gly Glu
 1060 1065 1070
 Arg Asn Ser Ile Ser Trp His Ala Pro Lys Arg Val Trp Ile His Gly
 1075 1080 1085
 Gly Ser Thr Val Gln Ala Phe Ala Ala Leu Thr Glu Leu Ala Ala Ser
 1090 1095 1100
 Gly Ile Gln Ala Val Val Glu Pro Asp Ser Pro Leu Ala Ser Tyr Thr
 1105 1110 1115 1120
 Ala Asp Leu Glu Gly Leu Leu Leu Val Asn Gly Lys Pro Glu Thr Ala
 1125 1130 1135
 Gly Ile Ser His Val Ala Ala Leu Ser Pro Leu Asp Ser Ala Arg Lys
 1140 1145 1150
 Gln Glu Leu Ala Ala His Asp Gly Ala Leu Ile Arg Ile Leu Pro Ser
 1155 1160 1165
 Glu Asn Gly Leu Asp Ile Leu Gln Val Phe Glu Glu Ile Ser Cys Ser
 1170 1175 1180

Val Asn Thr Thr Ala Ala Gly Gly Asn Ala Ser Leu Met Ala Val Ala
 1185 1190 1195 1200

Asp

<210> 37
 <211> 1509
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB1467 DNA sequence

<400> 37
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 gtgcgcttcg ccgccggact ggacgaacag aaaaatctga gtgccgcttc ccaagaacag 180
 gctttggact gtctggcaaa attcggcgaa cgcctgcgcg gcttccgccc tgaacaggta 240
 cgcccggtgg caaccaacac attccgcgtt gccaaaaaca tcgcagattt ccttcccaaa 300
 gccgaagcgg cattgggttt ccccatcgaa atcatcgccg ggcgcggaaga ggcgcggtg 360
 atttataccg gcgtgatcca caccctcccc ccgggcggcg gcaaaatgct gggtatcgac 420
 atcggcgggc gttcgacaga atttgtcatc ggctcgacgc tgaatcccga cattaccgaa 480
 agcctgccct tgggtgcgt aacctacagc ctgcgcttct tccaaaacaa aatcaccgcc 540
 aaagacttcc aatctgccat ttccgcgcgc cgcaacgaaa tccagcgtat cagcaaaaat 600
 atgaggcgcg aaggttggga ttccgcgcgc ggcacatcgg gttcggcaaa atccatccgc 660
 gacgtgcttg ccgccgaaat gccccaagag gcggacatta cctacaaagg catgcgcgc 720
 ctgcgccgaa gcacatcga agccgggttc gtcaaaaaag ccaaatttga aaacctgaaa 780
 ccggaacgca tcgaagtttt tgccggcgga cttgccgtga tgatggcggc gtttgaggaa 840
 atgaaactcg acaggatgac cgtaaccgaa gccgccctgc gcgacggcgt gttttacgat 900
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 ctcggaacgc ccgccgcgt gcacgaaatc ggtttggaca tcgcccacac cggctatcac 1140
 aagcattccg cctacatcct cgaaaacgcc gatatgccgg gtttctcacg caaagaacag 1200
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 agctgcggtt tcacctgcg tattgacagg gaatggctgg aacgccatcc cctgattgcc 1440
 gacgcattgg aatatgaaag cgtccaatgg caaaaaatca atatgccgtt caaagtcgag 1500
 gccgtctga----- 1509

<210> 38
 <211> 323
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB1467 protein sequence

<400> 38
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 Cys Asn Asn Asn Gly Lys Val Asp Ser Lys Met Val Arg Ala Ala Gly
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 Asp Lys Asn Ser Ala Ala Ser Ala Asp Cys Ala Lys Gly Arg Arg Gly
 35 40 45
 Arg Val Arg Ala Val Ala Thr Asn Thr Arg Val Ala Lys Asn Ala Asp
 50 55 60
 Lys Ala Ala Ala Gly Ala Gly Arg Ala Arg Tyr Thr Gly Val His Thr
 65 70 75 80
 Gly Gly Gly Lys Met Val Asp Gly Gly Gly Ser Thr Val Gly Ser Thr

	85		90		95
Asn Asp Thr Ser Gly Cys Val Thr Tyr Ser Arg Asn Lys Thr Ala Lys	100		105		110
Asp Ser Ala Ser Ala Ala Arg Asn Arg Ser Lys Asn Met Arg Arg Gly	115		120		125
Trp Asp Ala Val Gly Thr Ser Gly Ser Ala Lys Ser Arg Asp Val Ala	130		135		140
Ala Met Ala Asp Thr Tyr Lys Gly Met Arg Ala Ala Arg Ala Gly Ser	145		150		155
Val Lys Lys Ala Lys Asn Lys Arg Val Ala Gly Gly Ala Val Met Met	165		170		175
Ala Ala Met Lys Asp Arg Met Thr Val Thr Ala Ala Arg Asp Gly Val	180		185		190
Tyr Asp Gly Arg Gly Asn Asp Met Arg Gly Thr Val Ala His Arg Tyr	195		200		205
His Val Ser Asn Ala Lys Arg Thr Ala Thr Ala Thr Met Asp Ser Cys	210		215		220
His Ala Lys Asn Val Thr Val Ala Trp Tyr Gly Arg Ala Ala Ala His	225		230		235
Gly Asp Ala His Thr Gly Tyr His Lys His Ser Ala Tyr Asn Ala Asp	245		250		255
Met Gly Ser Arg Lys Thr Ala Val Gly His Arg Gly Asp Met Lys Lys	260		265		270
Met Ser Gly Gly Thr Asn Met Trp Tyr Ala Val Ser Arg Ala Ala Cys	275		280		285
Arg Ser Arg Asp Ser Lys Asn Met Arg Thr Asp Thr Ser Cys Gly Arg	290		295		300
Asp Arg Trp Arg His Ala Asp Ala Tyr Ser Val Trp Lys Asn Met Lys	305		310		315
Val Ala Val					

<210> 39

<211> 393

<212> DNA

<213> Neisseria meningitidis serogroup B NMB2056 DNA sequence

<400> 39

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ctgattaaag gtacaggtca aatcatcgta aacggtcgtc ccgttgacga attcttcgca	120
cgggaaaacca gccgaatggt tgttcgccaa cccttggttc tgactgaaaa cgccgaatct	180
ttcgacatca aagtcaatgt tgttggcggc ggcgaaaccg gccagtccgg cgcaatccgc	240
cacggcatta cccgtgccct gatcgacttc gatgccgcgt tgaaaccgcg cttgtctcaa	300
gctggttttg ttaccgcgga tgccgcgaa gtcgaacgta aaaaaccggg tctgcgcaaa	360
gcacgcctg caaaacaatt ctccaaacgt taa	393

<210> 40
 <211> 130
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB2056 protein sequence

<400> 40
 Met Asn Gly Lys Tyr Tyr Tyr Gly Thr Gly Arg Arg Lys Ser Ser Val
 1 5 10 15
 Ala Arg Val Phe Leu Ile Lys Gly Thr Gly Gln Ile Ile Val Asn Gly
 20 25 30
 Arg Pro Val Asp Glu Phe Phe Ala Arg Glu Thr Ser Arg Met Val Val
 35 40 45
 Arg Gln Pro Leu Val Leu Thr Glu Asn Ala Glu Ser Phe Asp Ile Lys
 50 55 60
 Val Asn Val Val Gly Gly Gly Glu Thr Gly Gln Ser Gly Ala Ile Arg
 65 70 75 80
 His Gly Ile Thr Arg Ala Leu Ile Asp Phe Asp Ala Ala Leu Lys Pro
 85 90 95
 Ala Leu Ser Gln Ala Gly Phe Val Thr Arg Asp Ala Arg Glu Val Glu
 100 105 110
 Arg Lys Lys Pro Gly Leu Arg Lys Ala Arg Arg Ala Lys Gln Phe Ser
 115 120 125
 Lys Arg
 130

<210> 41
 <211> 567
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB0808 DNA sequence

<400> 41
 atgtccgccc tcctcccat catcaaccgc ctgattctgc aaagcccgga cagccgctcg 60
 gaacttgccg ctttgcagg caaaacactg accctgaaca ttgccgggct gaaactggcg 120
 ggacgcatca cggaagacgg tttgctctcg gcgggaaacg gctttgcaga caccgaaatt 180
 accttccgca acagcgcggt acagaaaatc ctccaaggag gcgaaccgga ggccggcgac 240
 atcgggctcg aaggcgacct catcctcggc atcgcggtac tgtccctgct cggcagcctg 300
 cgttcccgcg catcggacga attggcacgg attttcggca cgcaggcaga catcggcagc 360
 cgtgccgccc acatcggaca cggcatcaaa caaatcggca ggaacatcgc cgaacaaatc 420
 ggccgatttt cccgcgaatc cgagtcgca aacatcggca acgaagccct tgccgactgc 480
 ctcgacgaaa taagcagact gcgcgacggc gtggaacgcc tcaacgaacg cctcgaccgg 540
 ctcgaacgcg acatttggat agactaa 567

<210> 42
 <211> 188
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB0808 protein sequence

<400> 42
 Met Ser Ala Leu Leu Pro Ile Ile Asn Arg Leu Ile Leu Gln Ser Pro
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 Asp Ser Arg Ser Glu Leu Ala Ala Phe Ala Gly Lys Thr Leu Thr Leu
 20 25 30

Asn Ile Ala Gly Leu Lys Leu Ala Gly Arg Ile Thr Glu Asp Gly Leu
 35 40 45
 Leu Ser Ala Gly Asn Gly Phe Ala Asp Thr Glu Ile Thr Phe Arg Asn
 50 55 60
 Ser Ala Val Gln Lys Ile Leu Gln Gly Gly Glu Pro Gly Ala Gly Asp
 65 70 75 80
 Ile Gly Leu Glu Gly Asp Leu Ile Leu Gly Ile Ala Val Leu Ser Leu
 85 90 95
 Leu Gly Ser Leu Arg Ser Arg Ala Ser Asp Glu Leu Ala Arg Ile Phe
 100 105 110
 Gly Thr Gln Ala Asp Ile Gly Ser Arg Ala Ala Asp Ile Gly His Gly
 115 120 125
 Ile Lys Gln Ile Gly Arg Asn Ile Ala Glu Gln Ile Gly Gly Phe Ser
 130 135 140
 Arg Glu Ser Glu Ser Ala Asn Ile Gly Asn Glu Ala Leu Ala Asp Cys
 145 150 155 160
 Leu Asp Glu Ile Ser Arg Leu Arg Asp Gly Val Glu Arg Leu Asn Glu
 165 170 175
 Arg Leu Asp Arg Leu Glu Arg Asp Ile Trp Ile Asp
 180 185

<210> 43
 <211> 627
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB0774 DNA sequence

<400> 43
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 gcggattgca gcacctacaa attccggacg cttgccaccg agctggcgcg cctgatggca 120
 tacgaggcaa gccgtgattt tgaaatcgaa aaatacctta tcgacggatg gtgcggtcag 180
 attgaaggcg accgcatcaa gggcaaaaaca ttgaccgtcg ttcccatact gcgtgcaggt 240
 ttgggtatgc ttgacggtgt gctcgacctg attccgactg ccaaaatcag tgtagtcgga 300
 ctgcagcgcg acgaagaaac gctgaagcct atttcctatt ttgagaaatt tgtggacagt 360
 atggacgaac gtccggcttt gattatcgat cctatgctgg cgacaggcgg ttcgatggtt 420
 gccaccatcg accttttgaa agccaagggc tgcaaaaata tcaaggcact ggtgctggtt 480
 gccgcgcccc aggggtgtgaa ggcggtcaac gacgcgcacc ctgacgttac gatttacacc 540
 gcgcgcgtcg acagccactt gaacgagaac ggctacatca tccccggctt gggcgatgcg 600
 ggcgacaaga ttttcggcac gcgctaa 627

<210> 44
 <211> 208
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB0774 protein sequence

<400> 44
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 20 25 30

Thr Glu Leu Ala Arg Leu Met Ala Tyr Glu Ala Ser Arg Asp Phe Glu
 35 40 45
 Ile Glu Lys Tyr Leu Ile Asp Gly Trp Cys Gly Gln Ile Glu Gly Asp
 50 55 60
 Arg Ile Lys Gly Lys Thr Leu Thr Val Val Pro Ile Leu Arg Ala Gly
 65 70 75 80
 Leu Gly Met Leu Asp Gly Val Leu Asp Leu Ile Pro Thr Ala Lys Ile
 85 90 95
 Ser Val Val Gly Leu Gln Arg Asp Glu Glu Thr Leu Lys Pro Ile Ser
 100 105 110
 Tyr Phe Glu Lys Phe Val Asp Ser Met Asp Glu Arg Pro Ala Leu Ile
 115 120 125
 Ile Asp Pro Met Leu Ala Thr Gly Gly Ser Met Val Ala Thr Ile Asp
 130 135 140
 Leu Leu Lys Ala Lys Gly Cys Lys Asn Ile Lys Ala Leu Val Leu Val
 145 150 155 160
 Ala Ala Pro Glu Gly Val Lys Ala Val Asn Asp Ala His Pro Asp Val
 165 170 175
 Thr Ile Tyr Thr Ala Ala Leu Asp Ser His Leu Asn Glu Asn Gly Tyr
 180 185 190
 Ile Ile Pro Gly Leu Gly Asp Ala Gly Asp Lys Ile Phe Gly Thr Arg
 195 200 205

<210> 45

<211> 657

<212> DNA

<213> *Neisseria meningitidis* serogroup B-NMB0778 DNA sequence

<400> 45

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cgcccgagcg	ataccgctaa	tccttatggt	gcgtccaaag	cgatggtgga	acggatgtta	120
acgacatcc	aaaaagccga	tccgcgctg	agcatgattt	tggtgcgtta	tttcaatccg	180
attggcgcg	atgaaagcgg	cttgattggc	gagcagccaa	acggcatccc	gaataatttg	240
ttgccttata	tctgccaagt	ggcggcaggc	aaactgccgc	aattggcggt	atttggcgat	300
gactacccta	cccccgacgg	cacggggatg	cgtgactata	ttcatgtgat	ggatttggca	360
gaaggccatg	tcgcggctat	gcaggcaaaa	agtaatgtag	caggcacgca	tttgctgaac	420
ttaggtccg	gcccgcgttc	ttcgggtgtg	gaaatcatcc	gcgcatttga	agcagcttcg	480
ggtttga	gttatga	agtcaaaccg	cgccgtgccg	gtgatttggc	gtgcttctat	540
gccgaccctt	cctatacaaa	ggcgcaaata	ggctggcaaa	cccagcgtga	tttaacccaa	600
atgatggaag	actcatggcg	ctgggtgagt	aataatccga	atggctacga	cgattaa	657

<210> 46

<211> 218

<212> PRT

<213> *Neisseria meningitidis* serogroup B NMB0778 protein sequence

<400> 46

Met Ala Phe Thr Leu Met Arg Arg Ala Met Ile Arg Lys Met Pro Tyr
 1 5 10 15

Thr Glu Asp Met Arg Pro Gly Asp Thr Ala Asn Pro Tyr Gly Ala Ser
 20 25 30
 Lys Ala Met Val Glu Arg Met Leu Thr Asp Ile Gln Lys Ala Asp Pro
 35 40 45
 Arg Trp Ser Met Ile Leu Leu Arg Tyr Phe Asn Pro Ile Gly Ala His
 50 55 60
 Glu Ser Gly Leu Ile Gly Glu Gln Pro Asn Gly Ile Pro Asn Asn Leu
 65 70 75 80
 Leu Pro Tyr Ile Cys Gln Val Ala Ala Gly Lys Leu Pro Gln Leu Ala
 85 90 95
 Val Phe Gly Asp Asp Tyr Pro Thr Pro Asp Gly Thr Gly Met Arg Asp
 100 105 110
 Tyr Ile His Val Met Asp Leu Ala Glu Gly His Val Ala Ala Met Gln
 115 120 125
 Ala Lys Ser Asn Val Ala Gly Thr His Leu Leu Asn Leu Gly Ser Gly
 130 135 140
 Arg Ala Ser Ser Val Leu Glu Ile Ile Arg Ala Phe Glu Ala Ala Ser
 145 150 155 160
 Gly Leu Thr Ile Pro Tyr Glu Val Lys Pro Arg Arg Ala Gly Asp Leu
 165 170 175
 Ala Cys Phe Tyr Ala Asp Pro Ser Tyr Thr Lys Ala Gln Ile Gly Trp
 180 185 190
 Gln Thr Gln Arg Asp Leu Thr Gln Met Met Glu Asp Ser Trp Arg Trp
 195 200 205
 Val Ser Asn Asn Pro Asn Gly Tyr Asp Asp
 210 215

<210> 47
 <211> 999
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB0337 DNA sequence

<400> 47
 atgagcagac ccgtaccgcg cgtattcggc agcgtttttc acagtcaaata gcccgtcctc 60
 gcctaccgcg aaggcaaatg gcagccgacc gaatggcaat cttcccaaga cctctccctc 120
 gcaccgggag cgcacgcctt gcactacggc agcgaatgtt tcgagggact gaaagccttc 180
 cgtcaggcag acggcaaaaat cgtgctgttc cgtccgactg ccaatatcgc gcgtatgcgg 240
 caaagtgcgg acattttgca cctgccgcgc cccgaaaccg aagcttatct tgacgcgcta 300
 atcaaatgg tcaaactgac cgccgatgaa attcccgatg cgcctgccgc cctgtacctg 360
 cgtccgacct taatcggtag cgatcccggt atcggcaagg ccggttctcc ttccgaaacc 420
 gccctgctgt atattttggc ttcccccgtc ggcgactatt tcaaagtcgg atcgcccgtc 480
 aaaattttgg tggaaaccga acacatccgc tgcgccccgc atatgggccc cgtcaaatgc 540
 ggccggcaact acgcttccgc catgcaactg gtgctgaagg cgaaagccga atatggcgca 600
 aatcaagtcg tggtctgccc gaacggcgac gtgcaggaaa ccggcgcgtc caactttatc 660
 ctgattaacg gcgatgaaat cattaccaa ccgctgaccg acgagttttt gcacggcgta 720
 acccgcgatt ccgtactgac ggttgccaaa gatttgggct ataccgtcag cgaacgcaat 780
 ttcacgggtt acgaactcaa agctgcgggt gaaaacgggt cggaagccat tttgaccggt 840
 acggcagccg tcatctcgcc cgttacttcc ttcgatcatg gcggcaaaga aatcgaagtg 900
 aaaagccaag aacgcggcta tgccatccgt aaggcgatta ccgacatcca gtatggtttg 960

gcggaagaca aatacggctg gctggttgaa gtgtgctga

999

<210> 48
<211> 332
<212> PRT
<213> Neisseria meningitidis serogroup B NMB0337 protein sequence

<400> 48
Met Ser Arg Pro Val Pro Ala Val Phe Gly Ser Val Phe His Ser Gln
1 5 10 15
Met Pro Val Leu Ala Tyr Arg Glu Gly Lys Trp Gln Pro Thr Glu Trp
20 25 30
Gln Ser Ser Gln Asp Leu Ser Leu Ala Pro Gly Ala His Ala Leu His
35 40 45
Tyr Gly Ser Glu Cys Phe Glu Gly Leu Lys Ala Phe Arg Gln Ala Asp
50 55 60
Gly Lys Ile Val Leu Phe Arg Pro Thr Ala Asn Ile Ala Arg Met Arg
65 70 75 80
Gln Ser Ala Asp Ile Leu His Leu Pro Arg Pro Glu Thr Glu Ala Tyr
85 90 95
Leu Asp Ala Leu Ile Lys Leu Val Lys Arg Ala Ala Asp Glu Ile Pro
100 105 110
Asp Ala Pro Ala Ala Leu Tyr Leu Arg Pro Thr Leu Ile Gly Thr Asp
115 120 125
Pro Val Ile Gly Lys Ala Gly Ser Pro Ser Glu Thr Ala Leu Leu Tyr
130 135 140
Ile Leu Ala Ser Pro Val Gly Asp Tyr Phe Lys Val Gly Ser Pro Val
145 150 155 160
Lys Ile Leu Val Glu Thr Glu His Ile Arg Cys Ala Pro His Met Gly
165 170 175
Arg Val Lys Cys Gly Gly Asn Tyr Ala Ser Ala Met His Trp Val Leu
180 185 190
Lys Ala Lys Ala Glu Tyr Gly Ala Asn Gln Val Leu Phe Cys Pro Asn
195 200 205
Gly Asp Val Gln Glu Thr Gly Ala Ser Asn Phe Ile Leu Ile Asn Gly
210 215 220
Asp Glu Ile Ile Thr Lys Pro Leu Thr Asp Glu Phe Leu His Gly Val
225 230 235 240
Thr Arg Asp Ser Val Leu Thr Val Ala Lys Asp Leu Gly Tyr Thr Val
245 250 255
Ser Glu Arg Asn Phe Thr Val Asp Glu Leu Lys Ala Ala Val Glu Asn
260 265 270
Gly Ala Glu Ala Ile Leu Thr Gly Thr Ala Ala Val Ile Ser Pro Val
275 280 285

Thr Ser Phe Val Ile Gly Gly Lys Glu Ile Glu Val Lys Ser Gln Glu
 290 295 300

Arg Gly Tyr Ala Ile Arg Lys Ala Ile Thr Asp Ile Gln Tyr Gly Leu
 305 310 315 320

Ala Glu Asp Lys Tyr Gly Trp Leu Val Glu Val Cys
 325 330

<210> 49

<211> 774

<212> DNA

<213> Neisseria meningitidis serogroup B NMB0191 DNA sequence

<400> 49

atgagtgcga	acatccttgc	catcgccaat	cagaaggcg	gtgtgggcaa	aacgacgacg	60
acggtaaatt	tggcggcttc	gctggcatcg	cgcgggcaaac	gcgtgctggt	ggtcgatttg	120
gatccgcagg	gcaatgcgac	gacgggcagc	ggcatcgaca	aggcgggttt	gcagtccggc	180
gtttatcagg	tcttattggg	cgatgcggac	gtgcagtcgg	cggcgggtacg	cagcaaagag	240
ggcggatacg	ctgtgttggg	tgcgaaccgc	gcgctggccg	gcgcggaaat	cgaactggtg	300
caggaaatcg	cccgggaagt	gcgtttgaaa	aacgcgctca	aggcagtgga	agaagattac	360
gactttatcc	tgatcgactg	cccgccttcg	ctgacgctgt	tgacgcttaa	cgggctggtg	420
gcggcgggcg	gcgtgattgt	gccgatgttg	tgcgaatatt	acgcgctgga	agggatttcc	480
gatttgattg	cgaccgtgcg	caaaatccgt	caggcggtca	atcccgattt	ggacatcacg	540
ggcatcgtgc	gcacgatgta	cgacagccgc	agcaggctgg	ttgccgaagt	cagcgaacag	600
ttgcgcagcc	atttcgggga	tttgcttttt	gaaaccgtca	tcccgcgcaa	tatccgcctt	660
gcggaagcgc	cgagccacgg	tatgcgggtg	atggccttacg	acgcgcaggg	aaagggtacc	720
aaggcgtatc	ttgccttggc	ggacgagctg	gcggcgaggg	tgtcggggaa	atag	774

<210> 50

<211> 257

<212> PRT

<213> Neisseria meningitidis serogroup B NMB0191 protein sequence

<400> 50

Met	Ser	Ala	Asn	Ile	Leu	Ala	Ile	Ala	Asn	Gln	Lys	Gly	Gly	Val	Gly
1			5						10					15	

Lys	Thr	Thr	Thr	Thr	Val	Asn	Leu	Ala	Ala	Ser	Leu	Ala	Ser	Arg	Gly
				20				25					30		

Lys	Arg	Val	Leu	Val	Val	Asp	Leu	Asp	Pro	Gln	Gly	Asn	Ala	Thr	Thr
		35					40					45			

Gly	Ser	Gly	Ile	Asp	Lys	Ala	Gly	Leu	Gln	Ser	Gly	Val	Tyr	Gln	Val
		50				55					60				

Leu	Leu	Gly	Asp	Ala	Asp	Val	Gln	Ser	Ala	Ala	Val	Arg	Ser	Lys	Glu
65					70					75					80

Gly	Gly	Tyr	Ala	Val	Leu	Gly	Ala	Asn	Arg	Ala	Leu	Ala	Gly	Ala	Glu
				85				90						95	

Ile	Glu	Leu	Val	Gln	Glu	Ile	Ala	Arg	Glu	Val	Arg	Leu	Lys	Asn	Ala
			100					105						110	

Leu	Lys	Ala	Val	Glu	Glu	Asp	Tyr	Asp	Phe	Ile	Leu	Ile	Asp	Cys	Pro
		115					120						125		

Pro	Ser	Leu	Thr	Leu	Leu	Thr	Leu	Asn	Gly	Leu	Val	Ala	Ala	Gly	Gly
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

130	135	140
Val Ile Val Pro Met Leu Cys Glu Tyr Tyr Ala Leu Glu Gly Ile Ser		
145	150	155 160
Asp Leu Ile Ala Thr Val Arg Lys Ile Arg Gln Ala Val Asn Pro Asp		
	165	170 175
Leu Asp Ile Thr Gly Ile Val Arg Thr Met Tyr Asp Ser Arg Ser Arg		
	180	185 190
Leu Val Ala Glu Val Ser Glu Gln Leu Arg Ser His Phe Gly Asp Leu		
	195	200 205
Leu Phe Glu Thr Val Ile Pro Arg Asn Ile Arg Leu Ala Glu Ala Pro		
	210	215 220
Ser His Gly Met Pro Val Met Ala Tyr Asp Ala Gln Ala Lys Gly Thr		
225	230	235 240
Lys Ala Tyr Leu Ala Leu Ala Asp Glu Leu Ala Ala Arg Val Ser Gly		
	245	250 255

Lys

<210> 51
 <211> 1335
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB1710 DNA sequence

<400> 51					
atgactgacc tgaacacocct gtttgccaac ctcaaacaac gcaatcccaa tcaggagccg					60
ttccatcagg cgggtgaaga agtcttcgat agtctcgatc cgtttttggc aaaaaatccg					120
aaatacaccc agcaaagcct gctggaacgc atcgtcgaac ccgaacgcgt cgtgatgttc					180
cgcgtaacct ggcaggacga taaagggcaa gtccaagtca accggggcta ccgcgtgcaa					240
atgagttccg ccacgggtcc ttacaaaggc ggcctgcgct tccatccgac cgtcgatttg					300
ggcgtattga aattcctcgc ttttgaacaa gtgttcaaaa acgccttgac caccctgcct					360
atggggcgcg gcaaaggcgg ttccgacttc gaccccaaag gcaaattccga tgccgaagta					420
atgcgcttct gccaaagcct tatgaccgaa ctctaccgcc acatcggcgc ggacaccgat					480
gttccggccg gcgacatcgg cgtaggcggg cgcgaaatcg gctacctgtt cggacaatac					540
aaaaaaatcc gcaacgagtt ttcttcgcgc ctgaccggca aagggttgga atggggcggc					600
agcctcatcc gtcccgaagc gaccggctac ggctgcgtct atttcgcca agcgatgctg					660
caaaccgcga acgatagttt tgaaggcaaa cgcgtcctga tttccggctc cggcaatgtg					720
gcgcaatacg ccgcccgaaaa agccatccaa ctgggtgcga aagtactgac cgtttccgac					780
tccaacggct tgcctctctt ccccgcacgc ggtatgaccg aagcgcaact cgcgccttg					840
atcgaattga aagaagtccg ccgcgaacgc gttgccacct acgcccgaaga gcaaggtctg					900
caataactttg aaaaacaaaa accgtggggc gtcgccgcgc aaatcgccct gccctgcgcg					960
accagaacg aattggacga agaagccgcc aaaaccctgt tggcaaacgg ctgctacgtc					1020
gttgccgaag gtgcgaatat gccgtcgact ttgggcgcgc tcgagcaatt tatcaaagcc					1080
ggcctcctct acgccccggg aaaagcctcc aatgccggcg gcgtggcaac ttcaggtttg					1140
gaaatgagcc aaaacgccat ccgcctgtct tggactcgtg aagaagtcga ccaacgcctg					1200
ttcggcatca tgcaaagcat ccacgaatcc tgtctgaaat acggcaaagt cggcgacaca					1260
gtaaaactacg tcaatgggtgc gaacattgcc ggtttcgtca aagttgccga tgcgatgctg					1320
gcgcaaggct tctaa					1335

<210> 52
 <211> 444
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB1710 protein sequence

<400> 52
 Met Thr Asp Leu Asn Thr Leu Phe Ala Asn Leu Lys Gln Arg Asn Pro
 1 5 10 15
 Asn Gln Glu Pro Phe His Gln Ala Val Glu Glu Val Phe Met Ser Leu
 20 25 30
 Asp Pro Phe Leu Ala Lys Asn Pro Lys Tyr Thr Gln Gln Ser Leu Leu
 35 40 45
 Glu Arg Ile Val Glu Pro Glu Arg Val Val Met Phe Arg Val Thr Trp
 50 55 60
 Gln Asp Asp Lys Gly Gln Val Gln Val Asn Arg Gly Tyr Arg Val Gln
 65 70 75 80
 Met Ser Ser Ala Ile Gly Pro Tyr Lys Gly Gly Leu Arg Phe His Pro
 85 90 95
 Thr Val Asp Leu Gly Val Leu Lys Phe Leu Ala Phe Glu Gln Val Phe
 100 105 110
 Lys Asn Ala Leu Thr Thr Leu Pro Met Gly Gly Gly Lys Gly Gly Ser
 115 120 125
 Asp Phe Asp Pro Lys Gly Lys Ser Asp Ala Glu Val Met Arg Phe Cys
 130 135 140
 Gln Ala Phe Met Thr Glu Leu Tyr Arg His Ile Gly Ala Asp Thr Asp
 145 150 155 160
 Val Pro Ala Gly Asp Ile Gly Val Gly Gly Arg Glu Ile Gly Tyr Leu
 165 170 175
 Phe Gly Gln Tyr Lys Lys Ile Arg Asn Glu Phe Ser Ser Val Leu Thr
 180 185 190
 Gly Lys Gly Leu Glu Trp Gly Gly Ser Leu Ile Arg Pro Glu Ala Thr
 195 200 205
 Gly Tyr Gly Cys Val Tyr Phe Ala Gln Ala Met Leu Gln Thr Arg Asn
 210 215 220
 Asp Ser Phe Glu Gly Lys Arg Val Leu Ile Ser Gly Ser Gly Asn Val
 225 230 235 240
 Ala Gln Tyr Ala Ala Glu Lys Ala Ile Gln Leu Gly Ala Lys Val Leu
 245 250 255
 Thr Val Ser Asp Ser Asn Gly Phe Val Leu Phe Pro Asp Ser Gly Met
 260 265 270
 Thr Glu Ala Gln Leu Ala Ala Leu Ile Glu Leu Lys Glu Val Arg Arg
 275 280 285
 Glu Arg Val Ala Thr Tyr Ala Lys Glu Gln Gly Leu Gln Tyr Phe Glu
 290 295 300
 Lys Gln Lys Pro Trp Gly Val Ala Ala Glu Ile Ala Leu Pro Cys Ala
 305 310 315 320

Thr Gln Asn Glu Leu Asp Glu Glu Ala Ala Lys Thr Leu Leu Ala Asn
 325 330 335
 Gly Cys Tyr Val Val Ala Glu Gly Ala Asn Met Pro Ser Thr Leu Gly
 340 345 350
 Ala Val Glu Gln Phe Ile Lys Ala Gly Ile Leu Tyr Ala Pro Gly Lys
 355 360 365
 Ala Ser Asn Ala Gly Gly Val Ala Thr Ser Gly Leu Glu Met Ser Gln
 370 375 380
 Asn Ala Ile Arg Leu Ser Trp Thr Arg Glu Glu Val Asp Gln Arg Leu
 385 390 395 400
 Phe Gly Ile Met Gln Ser Ile His Glu Ser Cys Leu Lys Tyr Gly Lys
 405 410 415
 Val Gly Asp Thr Val Asn Tyr Val Asn Gly Ala Asn Ile Ala Gly Phe
 420 425 430
 Val Lys Val Ala Asp Ala Met Leu Ala Gln Gly Phe
 435 440

<210> 53
 <211> 867
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB0062 DNA sequence

<400> 53
 Ala Thr Gly Ala Ala Ala Gly Gly Cys Ala Thr Cys Ala Thr Ala Cys
 1 5 10 15
 Thr Gly Gly Cys Ala Gly Gly Cys Gly Gly Cys Ala Gly Cys Gly Gly
 20 25 30
 Cys Ala Cys Gly Cys Gly Cys Cys Thr Cys Thr Ala Cys Cys Cys Cys
 35 40 45
 Ala Thr Cys Ala Cys Gly Cys Gly Cys Gly Gly Cys Gly Thr Ala Thr
 50 55 60
 Cys Cys Ala Ala Ala Cys Ala Gly Cys Thr Cys Cys Thr Gly Cys Cys
 65 70 75 80
 Cys Gly Thr Gly Thr Ala Cys Gly Ala Cys Ala Ala Ala Cys Cys Gly
 85 90 95
 Ala Thr Gly Ala Thr Thr Thr Ala Thr Thr Ala Cys Cys Cys Cys Thr
 100 105 110
 Thr Gly Thr Cys Gly Gly Thr Thr Thr Thr Gly Ala Thr Gly Cys Thr
 115 120 125
 Gly Gly Cys Gly Gly Gly Ala Ala Thr Cys Cys Gly Cys Gly Ala Thr
 130 135 140
 Ala Thr Thr Thr Thr Gly Gly Thr Gly Ala Thr Thr Ala Cys Cys Gly
 145 150 155 160
 Cys Gly Cys Cys Thr Gly Ala Ala Gly Ala Cys Ala Ala Cys Gly Cys

	165		170		175
Cys Thr Cys Thr Thr Thr Cys Ala Ala Ala Cys Gly Cys Cys Thr Gly	180	185		190	
Cys Thr Thr Gly Gly Cys Gly Ala Cys Gly Gly Cys Ala Gly Cys Gly	195	200		205	
Ala Thr Thr Thr Cys Gly Gly Cys Ala Thr Thr Thr Cys Cys Ala Thr	210	215		220	
Cys Ala Gly Thr Thr Ala Thr Gly Cys Cys Gly Thr Gly Cys Ala Ala	225	230		235	240
Cys Cys Cys Ala Gly Thr Cys Cys Gly Gly Ala Cys Gly Gly Cys Thr	245	250		255	
Thr Gly Gly Cys Ala Cys Ala Gly Gly Cys Ala Thr Thr Thr Ala Thr	260	265		270	
Cys Ala Thr Cys Gly Gly Cys Gly Ala Ala Gly Ala Ala Thr Thr Thr	275	280		285	
Ala Thr Cys Gly Gly Cys Ala Ala Cys Gly Ala Cys Ala Ala Thr Gly	290	295		300	
Thr Thr Thr Gly Cys Thr Thr Gly Gly Thr Thr Thr Thr Gly Gly Gly	305	310		315	320
Cys Gly Ala Cys Ala Ala Thr Ala Thr Thr Thr Thr Thr Thr Ala Cys	325	330		335	
Gly Gly Thr Cys Ala Gly Thr Cys Gly Thr Thr Thr Thr Ala Cys Gly Cys	340	345		350	
Ala Ala Ala Cys Ala Thr Thr Gly Ala Ala Ala Cys Ala Gly Gly Cys	355	360		365	
Gly Gly Cys Ala Gly Cys Gly Cys Ala Ala Ala Cys Gly Cys Ala Cys	370	375		380	
Gly Gly Cys Gly Cys Ala Ala Cys Cys Gly Thr Gly Thr Thr Thr Gly	385	390		395	400
Cys Thr Thr Ala Thr Cys Ala Gly Gly Thr Cys Ala Ala Ala Ala Ala	405	410		415	
Cys Cys Cys Cys Gly Ala Ala Cys Gly Thr Thr Thr Cys Gly Gly Cys	420	425		430	
Gly Thr Gly Gly Thr Thr Gly Ala Ala Thr Thr Thr Ala Ala Cys Gly	435	440		445	
Ala Ala Ala Ala Cys Thr Thr Cys Cys Gly Cys Gly Cys Cys Gly Thr	450	455		460	
Thr Thr Cys Cys Ala Thr Cys Gly Ala Ala Gly Ala Ala Ala Ala Ala	465	470		475	480
Cys Cys Gly Cys Ala Ala Cys Gly Gly Cys Cys Cys Ala Ala Ala Thr	485	490		495	

Cys Cys Gly Ala Thr Thr Gly Gly Gly Cys Gly Gly Thr Ala Ala Cys
 500 505 510
 Cys Gly Gly Cys Thr Thr Gly Thr Ala Thr Thr Thr Cys Thr Ala Cys
 515 520 525
 Gly Ala Cys Ala Ala Cys Cys Gly Cys Gly Cys Cys Gly Thr Cys Gly
 530 535 540
 Ala Gly Thr Thr Cys Gly Cys Cys Ala Ala Ala Cys Ala Gly Cys Thr
 545 550 555 560
 Cys Ala Ala Ala Cys Cys Gly Thr Cys Cys Gly Cys Ala Cys Gly Cys
 565 570 575
 Gly Gly Cys Gly Ala Ala Thr Thr Gly Gly Ala Ala Ala Thr Thr Ala
 580 585 590
 Cys Cys Gly Ala Cys Cys Thr Cys Ala Ala Cys Cys Gly Gly Ala Thr
 595 600 605
 Gly Thr Ala Thr Thr Thr Gly Gly Ala Ala Gly Ala Cys Gly Gly Cys
 610 615 620
 Thr Cys Gly Cys Thr Cys Thr Cys Cys Gly Thr Thr Cys Ala Ala Ala
 625 630 635 640
 Thr Ala Thr Thr Gly Gly Gly Ala Cys Gly Cys Gly Gly Thr Thr Thr
 645 650 655
 Cys Gly Cys Gly Thr Gly Gly Cys Thr Gly Gly Ala Cys Ala Cys Cys
 660 665 670
 Gly Gly Cys Ala Cys Cys Cys Ala Cys Gly Ala Gly Ala Gly Cys Cys
 675 680 685
 Thr Gly Cys Ala Cys Gly Ala Ala Gly Cys Cys Gly Cys Thr Thr Cys
 690 695 700
 Ala Thr Thr Cys Gly Thr Cys Cys Ala Ala Ala Cys Cys Gly Thr Gly
 705 710 715 720
 Cys Ala Ala Ala Ala Thr Ala Thr Cys Cys Ala Ala Ala Ala Cys Cys
 725 730 735
 Thr Gly Cys Ala Cys Ala Thr Cys Gly Cys Cys Thr Gly Cys Cys Thr
 740 745 750
 Cys Gly Ala Ala Gly Ala Ala Ala Thr Cys Gly Cys Thr Thr Gly Gly
 755 760 765
 Cys Gly Cys Ala Ala Cys Gly Gly Thr Thr Gly Gly Cys Thr Thr Thr
 770 775 780
 Cys Cys Gly Ala Thr Gly Ala Ala Ala Ala Ala Cys Thr Gly Gly Ala
 785 790 795 800
 Ala Gly Ala Ala Thr Thr Gly Gly Cys Gly Cys Gly Cys Cys Cys Gly
 805 810 815

Ala Thr Gly Gly Cys Gly Ala Ala Ala Ala Cys Cys Ala Ala Thr
820 825 830

Ala Cys Gly Gly Cys Cys Ala Ala Thr Ala Thr Thr Thr Gly Cys Thr
835 840 845

Gly Cys Gly Cys Cys Thr Gly Thr Thr Gly Ala Ala Ala Ala Ala Ala
850 855 860

Thr Ala Ala
865

<210> 54

<211> 288

<212> PRT

<213> Neisseria meningitidis serogroup B NMB0062 protein sequence

<400> 54

Met Lys Gly Ile Ile Leu Ala Gly Gly Ser Gly Thr Arg Leu Tyr Pro
1 5 10 15

Ile Thr Arg Gly Val Ser Lys Gln Leu Leu Pro Val Tyr Asp Lys Pro
20 25 30

Met Ile Tyr Tyr Pro Leu Ser Val Leu Met Leu Ala Gly Ile Arg Asp
35 40 45

Ile Leu Val Ile Thr Ala Pro Glu Asp Asn Ala Ser Phe Lys Arg Leu
50 55 60

Leu Gly Asp Gly Ser Asp Phe Gly Ile Ser Ile Ser Tyr Ala Val Gln
65 70 75 80

Pro Ser Pro Asp Gly Leu Ala Gln Ala Phe Ile Ile Gly Glu Glu Phe
85 90 95

Ile Gly Asn Asp Asn Val Cys Leu Val Leu Gly Asp Asn Ile Phe Tyr
100 105 110

Gly Gln Ser Phe Thr Gln Thr Leu Lys Gln Ala Ala Ala Gln Thr His
115 120 125

Gly Ala Thr Val Phe Ala Tyr Gln Val Lys Asn Pro Glu Arg Phe Gly
130 135 140

Val Val Glu Phe Asn Glu Asn Phe Arg Ala Val Ser Ile Glu Glu Lys
145 150 155 160

Pro Gln Arg Pro Lys Ser Asp Trp Ala Val Thr Gly Leu Tyr Phe Tyr
165 170 175

Asp Asn Arg Ala Val Glu Phe Ala Lys Gln Leu Lys Pro Ser Ala Arg
180 185 190

Gly Glu Leu Glu Ile Thr Asp Leu Asn Arg Met Tyr Leu Glu Asp Gly
195 200 205

Ser Leu Ser Val Gln Ile Leu Gly Arg Gly Phe Ala Trp Leu Asp Thr
210 215 220

Gly Thr His Glu Ser Leu His Glu Ala Ala Ser Phe Val Gln Thr Val

225 230 235 240

Gln Asn Ile Gln Asn Leu His Ile Ala Cys Leu Glu Glu Ile Ala Trp
 245 250 255

Arg Asn Gly Trp Leu Ser Asp Glu Lys Leu Glu Glu Leu Ala Arg Pro
 260 265 270

Met Ala Lys Asn Gln Tyr Gly Gln Tyr Leu Leu Arg Leu Leu Lys Lys
 275 280 285

<210> 55
 <211> 918
 <212> DNA
 <213> Neisseria meningitidis serogroup B NMB1583 DNA sequence

<400> 55
 atgaatttga ctaaaacaca acgccaactg cacaactttc tgaccctcgc ccaagaagca 60
 gggtcgtgt ccaagctcgc caaactctgc ggctaccgta ccccgctcgc actctacaaa 120
 ctcaaacac gccttgaaaa gcaggcagaa gacccagatg cacgcggcat ccgtcccagc 180
 ctgatggcaa aactcgaaaa acacaccggc aaacccaaaag gctgggtcga cagaaaaacac 240
 cgcgaacgca ctgtccccga aaccgcccga gaaagcaccg gaactgccga aacccaaatt 300
 gccgaaaccg catctgctgc cggtgcccgc agcgttaccg tcaaccgcaa tacctgcgaa 360
 acccaaatca ccgtctccat caacctcgac ggcagcggca aaagcaggct ggataccggc 420
 gtacccttcc tcgaacacat gatcgatcaa atcgcccgcc acggcatgat tgacatcgac 480
 atcagctgca aaggcgacct gcacatcgac gaccaccaca ccgccgaaga catcggcatc 540
 aactcggac aagcaatccg gcaggcactc ggcgacaaaa aaggcatccg ccgttacgga 600
 cattcctacg tcccgtcoga cgaagccctc agccgcgtcg tcatcgacct ttccggccgc 660
 cccggactcg tgtacaacat cgaatttacc cgcgcactaa tcggacgttt cgatgtcgat 720
 ttgtttgaag aattttttcca cggcatcgtc aaccacagta tgatgacct gcacatcgac 780
 aacctcagcg gcaaaaacgc ccaccatcag gcggaaccg tattcaaagc cttcggggcg 840
 gccctgcgta tggcagtcga acacgacccg cgcattggcag gacagacccc ctcgacaaa 900
 ggcacgctga ccgcataa 918

<210> 56
 <211> 305
 <212> PRT
 <213> Neisseria meningitidis serogroup B NMB1583 protein sequence

<400> 56
 Met Asn Leu Thr Lys Thr Gln Arg Gln Leu His Asn Phe Leu Thr Leu
 1 5 10 15

Ala Gln Glu Ala Gly Ser Leu Ser Lys Leu Ala Lys Leu Cys Gly Tyr
 20 25 30

Arg Thr Pro Val Ala Leu Tyr Lys Leu Lys Gln Arg Leu Glu Lys Gln
 35 40 45

Ala Glu Asp Pro Asp Ala Arg Gly Ile Arg Pro Ser Leu Met Ala Lys
 50 55 60

Leu Glu Lys His Thr Gly Lys Pro Lys Gly Trp Leu Asp Arg Lys His
 65 70 75 80

Arg Glu Arg Thr Val Pro Glu Thr Ala Ala Glu Ser Thr Gly Thr Ala
 85 90 95

Glu Thr Gln Ile Ala Glu Thr Ala Ser Ala Ala Gly Cys Arg Ser Val
 100 105 110

Thr Val Asn Arg Asn Thr Cys Glu Thr Gln Ile Thr Val Ser Ile Asn
 115 120 125
 Leu Asp Gly Ser Gly Lys Ser Arg Leu Asp Thr Gly Val Pro Phe Leu
 130 135 140
 Glu His Met Ile Asp Gln Ile Ala Arg His Gly Met Ile Asp Ile Asp
 145 150 155 160
 Ile Ser Cys Lys Gly Asp Leu His Ile Asp Asp His His Thr Ala Glu
 165 170 175
 Asp Ile Gly Ile Thr Leu Gly Gln Ala Ile Arg Gln Ala Leu Gly Asp
 180 185 190
 Lys Lys Gly Ile Arg Arg Tyr Gly His Ser Tyr Val Pro Leu Asp Glu
 195 200 205
 Ala Leu Ser Arg Val Val Ile Asp Leu Ser Gly Arg Pro Gly Leu Val
 210 215 220
 Tyr Asn Ile Glu Phe Thr Arg Ala Leu Ile Gly Arg Phe Asp Val Asp
 225 230 235 240
 Leu Phe Glu Glu Phe Phe His Gly Ile Val Asn His Ser Met Met Thr
 245 250 255
 Leu His Ile Asp Asn Leu Ser Gly Lys Asn Ala His His Gln Ala Glu
 260 265 270
 Thr Val Phe Lys Ala Phe Gly Arg Ala Leu Arg Met Ala Val Glu His
 275 280 285
 Asp Pro Arg Met Ala Gly Gln Thr Pro Ser Thr Lys Gly Thr Leu Thr
 290 295 300

Ala
 305

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